

حمل الآن

مجاناً وحصرياً

المراجعة رقم (1)

اختبار شهر مارس



Test

1

1 Choose the correct answer from those given :

- (1) If the geometric mean of the two numbers 9 and y is 15, then $y = \dots\dots\dots$
 (a) 135 (b) 10 (c) 25 (d) ± 25
- (2) If $y = \tan x$, then $\frac{dy}{dx} = \dots\dots\dots$
 (a) $1 + y$ (b) $1 - y$ (c) $1 + y^2$ (d) $1 - y^2$
- (3) If $y = (x^2 + 2)(5 - x)$, then $\frac{dy}{dx} = \dots\dots\dots$ at $x = 1$
 (a) -15 (b) 5 (c) -5 (d) 2
- (4) If $\sin A = \frac{4}{5}$ where $0^\circ < A < 90^\circ$, $\cos B = \frac{-12}{13}$ where $90^\circ < B < 180^\circ$, then $\csc(A - B) = \dots\dots\dots$
 (a) $-\frac{63}{65}$ (b) $-\frac{65}{63}$ (c) $\frac{63}{65}$ (d) $\frac{65}{63}$
- (5) The average rate of change of the function $f : f(x) = x^2 + 1$ when x changes from 2 to 2.5 equals $\dots\dots\dots$
 (a) 4.5 (b) 5.4 (c) 0.54 (d) 0.45
- (6) An arithmetic sequence in which $S_5 - S_4 = 20$, $S_8 - S_7 = 29$, then $T_{51} = \dots\dots\dots$
 (a) 49 (b) 98 (c) 155 (d) 158
- (7) The number of terms of a geometric sequence its first term = 243 and its last term = 1 and the sum of its terms = 364 equals $\dots\dots\dots$
 (a) 6 (b) 7 (c) 4 (d) 8
- (8) If the function $f : f(x) = \begin{cases} ax^2 + 1 & \text{at } x \geq 2 \\ 4x - 3 & \text{at } x < 2 \end{cases}$ is differentiable at $x = 2$ then $a = \dots\dots\dots$
 (a) 1 (b) 2 (c) 3 (d) 4
- (9) From the top of a hill, a man observed the angles of depression of the top and the base of a tower and their measures were 22° and 30° respectively where the two bases of the hill and the tower are on the same horizontal level. If the height of the tower 50 m., then the height of hill to the nearest metre $\approx \dots\dots\dots$
 (a) 153 (b) 182 (c) 167 (d) 193
- (10) If $x \in [0, \pi[$ and $\frac{\tan x - \cot 55^\circ}{1 + \tan x \cot 55^\circ} = 1$, then $x = \dots\dots\dots$
 (a) $\frac{\pi}{9}$ (b) $\frac{4\pi}{9}$ (c) $\frac{5\pi}{9}$ (d) $\frac{4\pi}{9}$ or $\frac{13\pi}{9}$

- (11) If $(T_n) = (3 \times 2^{-n})$ is a geometric sequence, then the sum of infinite terms starting from its first term =
- (a) 2 (b) 3 (c) 4 (d) 9
- (12) The sum of the second mean and fourth mean from an arithmetic sequence equals 12 and the seventh mean is more than the third mean by 4, then the sequence is
- (a) (3, 4, 5, ...) (b) (3, 5, 7, ...) (c) (5, 4, 3, ...) (d) (3, 7, 11, ...)

2 Answer the following two questions :

- (1) Find the number of terms necessary to be taken from the arithmetic sequence (25, 23, 21, ...) starting from the first term to make the sum equal to 120
- (2) If $y = z^3 - 5$, $z = 2x^2 - 3x$ Find : $\frac{dy}{dx}$, then find its value at $x = 1$

Test

2

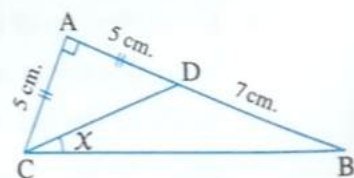
1 Choose the correct answer from those given :

- (1) If (29, x , ..., $3x$, 95) is an arithmetic sequence, then $x = \dots$
- (a) 21 (b) 31 (c) 95 (d) 124
- (2) The value of the series $\sum_{r=3}^7 (3r - 1)$ equals
- (a) 62 (b) 70 (c) 75 (d) 77
- (3) If $f(x) = 5g(x) + 20$, then $g'(x) = \dots$
- (a) $f'(x)$ (b) $f'(x) - 20$ (c) $5f'(x)$ (d) $\frac{1}{5}f'(x)$
- (4) The function $f : f(x) = \begin{cases} x^2 + 2x, & x \leq 1 \\ 4x - 1, & x > 1 \end{cases}$ is at $x = 1$
- (a) continuous but not differentiable (b) continuous and differentiable
- (c) not continuous and not differentiable (d) not continuous but differentiable

(5) In the opposite figure :

$\tan X = \dots$

- (a) $\frac{7}{17}$ (b) $\frac{5}{13}$
- (c) $\frac{5}{12}$ (d) $\frac{12}{35}$



- (6) If the average rate of change in f equals 2.4 when x changes from 4 to 4.2, then the variation in $f = \dots$
- (a) 0.32 (b) 0.48 (c) 3.6 (d) 7.2

(7) The first term of a geometric sequence equals the sum of the next infinite terms , then the common ratio of this sequence equals

- (a) 0.5 (b) 0.333 (c) 0.25 (d) 0.666

(8) If $(X, 7, y)$ form an arithmetic sequence and $(X + 2, 5, y - 6)$ form a geometric sequence , then $y - X = \dots\dots\dots$

- (a) 3 (b) 8 (c) 11 (d) 14

(9) An arithmetic sequence consists of 15 terms and its middle term is 23 , then the sum of terms of this sequence =

- (a) 345 (b) 225 (c) 450 (d) 690

(10) If A and B are two acute angles and $\tan A = \frac{5}{6}$, $\tan B = \frac{1}{11}$, then $A + B = \dots\dots\dots$

- (a) 30° (b) 60° (c) 45° (d) 75°

(11) $\frac{d}{dX} (3X^2 + 5X) = \dots\dots\dots$ at $X = -1$

- (a) -1 (b) -3 (c) -6 (d) 3

(12) The sum of n terms of a sequence is given by the relation $S_n = n^2 - 2n$, then its fifth term =

- (a) 35 (b) 15 (c) 10 (d) 7

2 Answer the following two questions :

(1) The sum of the first term and fourth term in a decreasing geometric sequence = 70
The sum of the second and third terms = 60 , find the sum of infinite terms starting from its first term.

(2) Find the first derivative of the function f :

$$f(X) = (4X^2 - 1)(7X^3 + X) \text{ at } X = 1$$



Test

1

1 Choose the correct answer from the given ones :

- (1) A car starts its motion with a uniform acceleration in a straight line with initial speed 10 m/sec. , then it reaches speed 30 m/sec. in 5 sec. , then its speed at $t = 3$ is m/sec.
- (a) 20 (b) 22 (c) 40 (d) 60
- (2) A particle moves such that its position vector $\vec{r} = (3t + 2)\hat{i} + (4t - 1)\hat{j}$, then the magnitude of its displacement till $t = 1$ equals length unit.
- (a) 5 (b) 7 (c) $\sqrt{34}$ (d) 8
- (3) A body is projected vertically upward from the top of a building 32.4 m. high with a velocity of 24 m/sec. , then the elapsed time till it reaches the ground surface = sec.
- (a) 4 (b) 8 (c) 5 (d) 6
- (4) A police car (A) moves with a speed of 90 km/h. chases another car (B) moves in the same direction , car B seems to car A as it retreats with a speed of 20 km/h. , then the actual speed of car B equals km/hr.
- (a) 70 (b) 110 (c) 90 (d) 45
- (5) A particle started its motion with velocity 20 cm/sec. and uniform acceleration 8 cm/sec² in the same direction as the initial velocity , then the distance covered in the fifth second only = cm.
- (a) 200 (b) 144 (c) 100 (d) 56
- (6) If a body fell vertically downwards , then
- (a) $v_o = 0$ (b) $v = \text{zero}$ (c) $v = v_o$ (d) $s = vt$

2 Answer the following questions :

- (1) A particle moves with uniform acceleration in a fixed direction , it covers 26 cm. in fourth second from the beginning of its motion and covers 56 cm. during the ninth second from the beginning of its motion , find the acceleration of the body and its initial velocity.

- (2) A train (A) moves with speed 100 km./hr. It over takes another train (B) of length 190 metres and moves with speed 60 km./hr. The two trains are moving on two parallel lines. If train (A) passed completely the train (B) in 27 seconds , find the length of the train (A).

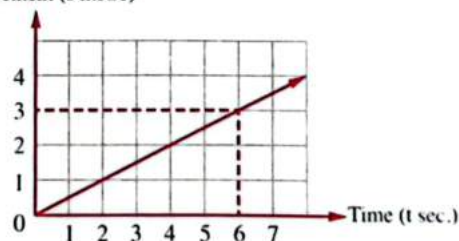
Test

2

1 Choose the correct answer from the given ones :

- (1) If a body is projected vertically up with speed 24.5 m/sec. , then it returns back to the point of projection after seconds.
 (a) 5 (b) 2.5 (c) 10 (d) zero
- (2) A plane moves with speed 300 km./h. due to the south for two hours then with speed 250 km./h. due to the north for a distance 750 km. , then the average speed of the whole journey = km./h.
 (a) 260 (b) 270 (c) 275 (d) 280
- (3) A body moves in a fixed direction with an initial speed and a uniform acceleration. The body covers 20 m. in the third sec. then covers 60 m. in the fifth and sixth seconds , then its initial speed equals m./sec.
 (a) 4 (b) 10 (c) 20 (d) 30
- (4) The positions of a moving particle at two instants 3rd second and 8th seconds was at A (7 , 2) and B (4 , 6) respectively , then the average velocity of the particle $\vec{v}_A = \dots\dots\dots$
 (a) $3\hat{i} - 4\hat{j}$ (b) $-3\hat{i} + 4\hat{j}$ (c) $\frac{3}{5}\hat{i} - \frac{4}{5}\hat{j}$ (d) $-\frac{3}{5}\hat{i} + \frac{4}{5}\hat{j}$
- (5) A body is ejected in opposite direction to the wind. It moves in a straight line with an initial speed of 10 m./sec. with uniform deceleration 2 m/sec² , then its displacement after 6 seconds equals m.
 (a) 96 (b) 12 (c) 24 (d) 36
- (6) The opposite figure represents the relation between the displacement and time , of a body that moves in a straight line , then the velocity of the body at t = 2 is m./sec.
 (a) 3 (b) 2
 (c) $\frac{1}{2}$ (d) 6

Displacement (s metre)



2 Answer the following questions :

- (1) The velocity of a car is reduced uniformly from 66 m/sec. to 79.2 km/h. during covering a distance of 66 m. Find the time the car takes to cover this distance and the covered distance after that till it became at rest.
- (2) A particle is projected vertically upwards with velocity 40 m/sec. from a point on the ground surface. After one second , another particle is projected from the same point and with the same vertical velocity of the first particle. After how many seconds and what is the height the two particles are meeting.
(consider the acceleration of gravity $g = 10 \text{ m/sec.}^2$)

كيفية طباعة صفحات معينة من ملف معين مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



حمل الآن

مجاناً وحصرياً

المراجعة رقم (2)

اختبار شهر مارس





① الرياضيات البحتة لغات - للصف الثاني الثانوي علمي الأداء الصف الأول الأسبوع الأول ①

Exercises on the concept and the properties of Sequences

1) Write down the first five terms of the sequence whose n^{th} term is given by the relation:

$$T_n = 2n^2 - 1$$

Solu:

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2) Write the general term of the sequence of the following even numbers: (2 , 4 , 6 , 8 ,)

Solu:

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3) Write down the first six terms of the sequence (T_n) where: $T_{n+2} = T_{n+1} + T_n$ where $n \geq 1$,
 $T_1 = 3$ and $T_2 = 4$.

Solu:

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4) Prove that the sequence (T_n) : $T_n = 3n + 2$ is an increasing sequence for all values of n

Solu:

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5) Find the eighth term of the sequence whose general term is given by the relation:

$$T_n = n - n^2$$

Solu:

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Exercises on the Angles of elevation and depression

6) From the top of a tower 65 meters high, the angles of depression of points A and B were measured from the horizontal plane and were 32° , $12^\circ 21'$ respectively. If the point D represents the base of the tower. $A \in \overline{BD}$. Find the length of $\overline{AB}$ to the nearest meter.

Solu:

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- 7) A house of height of 12 meters is built on a hill. From a point on the ground, the angles of elevation of the top and base of the house were measured. Their measurements were found to be 32° and 24° respectively. Find the height of the hill to the nearest meter.

Solu:

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Exercises on the Variation , Average Rate of Chang and Rate of Change

- 8) If f is a function: $f(x) = 4x^2 + x - 2$ and x changed from 2 to $2 + h$, then find the function of variation V , then calculate the variation in f when: $h = 0.3$

Solu:

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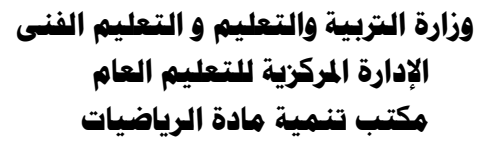
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Solu:



1 الرياضيات البحتة لغات - للصف الثاني الثانوي علمي الأداء المنزلي الأسبوع الأول 1

Exercises on the concept and the properties of Sequences

1) Write down the first five terms of the sequence whose n^{th} term is given by the relation:

$$T_n = n^2 - 2$$

Solu:

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2) Write the general term of the sequence of the following odd numbers: (1 , 3 , 5 , 7 ,)

Solu:

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3) Write down the first six terms of the sequence (T_n) where: $T_{n+2} = T_{n+1} + T_n$, where $n \geq 1$, $T_1 = 2$ and $T_2 = 3$.

Solu:

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4) Prove that the sequence (T_n): $T_n = \frac{1}{3n-1}$ is a decreasing sequence for all values of n

Solu:

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5) Find the seventh term of the sequence whose general term is given by the relation:

$$T_n = 2n^2 + 3$$

Solu:
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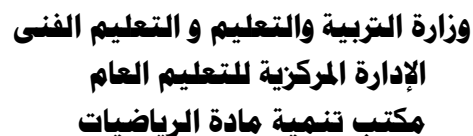
Exercises on the Angles of elevation and depression

6) From a point on the surface of the earth the angle of elevation of the top of a tower was observed and found to be 25° . Then the observer walked a distance of 57 meters in a straight horizontal line towards the base of the tower and found that the angle of elevation of the top of the tower was $52^\circ 30'$. Find the height of the tower "approximate to the nearest meter".

Solu:
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7) A person observed the angle of elevation of the top of a tower from a point on the surface of the earth and found that its measurement was 20° . Then he walked on a horizontal path towards the base of the tower for a distance of 50 meters and observed the angle of elevation of the top of the tower again and found that its measurement was 42° . Find the height of the tower "approximate to the nearest meter"

Solu:
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8) If f is a function $f(x) = 3x^2 + x - 2$ and x varies from 2 to $2 + h$, then find the function of variation V , then calculate the change in f when: $h = 0.3$

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Solu:

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Solu:

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2 الرياضيات البحتة لغات - للصف الثاني الثانوي علمي الأداء الصفى الأسبوع الثانى 2

Exercises on Series and summation notation

1) Expand the following series $\sum_{r=1}^5 (3r^2 - 1)$, then find its sum

Solu:

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2) Use the summation notation to write down the series: $1 + 4 + 9 + 16 + 25 + \dots + 100$

Solu:

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3) Find using the properties of the summation notation $\sum$ the value of $\sum_{r=1}^6 (r^2 - 2r + 3)$

Solu:

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4) Find using the properties of the summation notation $\sum$ the value of $\sum_{r=3}^7 (3r - 5)$

Solu:

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Exercises on the Angles of elevation and depression

5) From the top of a rock 60 meters above the ground, the angles of depression of the top and base of a tower were measured. Their measurements were found to be 15° and 35° respectively. Note that the bases of the rock and the tower are in the same horizontal plane. Find the height of the tower to the nearest meter.

Solu:

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6) From the window of a building 8 meters above the ground, the angle of elevation of the top of a tree was 16° and the angle of depression of the base of the tree was 25° . Find the height of the tree and its distance from the building to the nearest meter, knowing that the bases of the building and the tree lie on the same horizontal plane.

Solu:

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7) A ship moved from a certain point in a direction 15° South of East at a speed of 20 km/h, and at the same moment from the same point another ship moved in the direction of 65° North of East at a speed of 12 km/h. Find the distance between the two ships after 2 hours from the moment they moved together to the nearest km

Solu:

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وزارة التربية والتعليم و التعليم الفني
الإدارة المركزية للتعليم العام
مكتب تنمية مادة الرياضيات

8) Find the average rate of change in the volume of a cube when the length of its edges changes from 6 cm to 8 cm.

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9) A marble fell into a pool of water, forming a circular wave that increases uniformly so that it maintains its circular shape. Find the average rate of change in the area of the wave when its radius changes from 8 cm to 8.3 cm.

Solu:
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10) A spherical balloon expands while maintaining its shape due to the pressure of the gas inside it. Find the rate of change in its surface area relative to its radius when the radius equals 21 cm.

Solu:
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2 الرياضيات البحتة لغات - للصف الثاني الثانوي علمي الأداء المنزلي الأسبوع الثاني 2

Exercises on Series and summation notation

1) Expand the following series $\sum_{r=1}^4 (5r^2 + 3)$, then find its sum

Solu:

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2) Use the summation notation to write down the series: $9 + 16 + 25 + \dots + 100$

Solu:

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3) Find using the properties of the summation notation $\sum$ the value of $\sum_{r=1}^5 (r^2 - 4r + 1)$

Solu:

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4) Find using the properties of the summation notation $\sum$ the value of $\sum_{r=4}^9 (6r + 10)$

Solu:

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Exercises on the Angles of elevation and depression

5) From the window of a house 30 meters above the ground, the angle of elevation of the top of a tower was 18° and the angle of depression of the base of the tower was 22° . Find the height of the tower and its distance from the house to the nearest meter, knowing that the bases of the house and the tower are located in the same horizontal plane.

Solu:

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6) From the top of a tower, the angles of depression of the top of a minaret and its base were measured. Their measurements were $28^\circ 47'$ and $47^\circ 52'$ respectively. If the height of the minaret is 33 meters, find the height of the tower to the nearest meter

Solu:

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7) A ship moved at a speed of 15 km/h in a direction of 35° South of West, and at the same moment and from the same place another ship moved at a speed of 24 km/h in a direction of North of West. Find the distance between the two ships after three hours from they started moving to the nearest kilometer.

Solu:

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8) Find the average rate of change in the total surface area of a cube when the length of its edges changes from 5 cm to 6 cm.

Solu:
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9) A circular lamina is stretched uniformly so that it retains its shape. Find the rate of change of its surface area with respect to its radius length. when the length of the radius is 7 cm. $[\pi = \frac{22}{7}]$

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10) Find the rate of change in the surface area of a spherical balloon relative to its radius length, which expands maintaining its shape due to the pressure of the gas inside it, when the radius length is 14 cm..

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2 الرياضيات البحتة لغات - للصف الثاني الثانوي علمي التقييمات الأسبوعية الأسبوع الثاني 2

The first group:

1) Write down the first five terms of the sequence whose n^{th} term is given by the relation:

$$T_n = n^2 + 2$$

Solu:

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2) Expand the following series $\sum_{r=3}^8 (2r^2 - 3)$, then find its sum

Solu:

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3) If the average rate of change in $f = 4.5$ when x changes from 5 to 5.2, find the change in f ?

Solu:

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4) From the window of a house 9 meters above the ground, the angle of elevation of the top of a tree was 20° and the angle of depression of the base of the tree was 15° . Find the height of the tree and its distance from the house to the nearest meter, knowing that the bases of the house and the tree are located in the same horizontal plane.

Solu:

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5) Find the rate of change in the lateral surface area of a cube when the edges length of equals 10 cm.

Solu:

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The second group:

1) Write down the first five terms of the sequence whose n^{th} term is given by the relation:

$$T_n = n^2 + 1$$

Solu:

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2) Expand the following series $\sum_{r=3}^7 (2r^2 - 1)$, then find its sum

Solu:

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3) If the average rate of change in $f = 6.5$ when x changes from 3 to 3.2 , find the change in f ?

Solu:

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4) From the top of the tower, the angles of depression of the top and the base of the minaret were measured as 25° and 45° respectively. If the height of the minaret is 27 meters. Find the height of the tower to the nearest meter.

Solu:

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5) Find the rate of change of the volume of a cube with respect to its edge length when the edge length is 10 cm.

Solu:

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The third group:

1) Write down the first five terms of the sequence whose n^{th} term is given by the relation:

$$T_n = n^2 + 3$$

Solu:

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2) Expand the following series $\sum_{r=2}^6 (2r^2 + 1)$, then find its sum

Solu:

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3) If the average rate of change in $f = 2.5$ when x changes from 4 to 4.2 , find the change in f ?

Solu:

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4) A ship moved at a speed of 20 km/h in a direction of 30° South of West, and at the same moment and from the same place another ship moved at a speed of 30 km/h in a direction of North-West. Find the distance between the two ships after two hours from they began moving to the nearest kilometer.

Solu:

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5) A spherical balloon expands while maintaining its shape due to the pressure of the gas inside it. Find the rate of change in the volume of the balloon with respect to its radius when the radius length is 28 cm.

Solu:

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رياضيات بحتة لغات ٢ ث علمي - الأداء الصفي - الأسبوع الثالث

Exercises on the Arithmetic Sequence

1) Find the number of terms of the arithmetic sequence (2 , 5 , 8 , , 80)

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2) Find the order and the value of the first negative term in the arithmetic sequence (67 , 64 , 61 ,)

Solu:

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3) Find the order and the value of the first term whose value is greater than 180 in the arithmetic sequence (3 , 7 , 11 ,)

Solu:

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4) Find the arithmetic sequence whose sixth term = 20 , and the ratio between its fourth term and its tenth term = 4 : 7

Solu:

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5) If some of arithmetic means are inserted between 1 , 17 and if the seventh mean equals three times its second mean . Find the number of means

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Exercises on Rules of Derivative

6) By using definition of the first derivative, find the derivative of the function $f : f(x) = x^3$. then find the measure of the positive angle that the tangent to the curve makes with the positive direction of the x-axis at the point (1 , 1) to the nearest degree.

Solu:

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7) Discuss the differentiability of the function f where $f(x) = \begin{cases} 3 - x^3 & \text{when } x \leq 1 \\ 2x + 1 & \text{when } x > 1 \end{cases}$ at $x = 1$

Solu:

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8) If the function f is differentiable at $x = 2$, then find the value of a where:

$$f(x) = \begin{cases} ax - 4 & \text{when } x < 2 \\ x^2 - x + 4 & \text{when } x \geq 2 \end{cases}$$

Solu:

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9) Discuss the differentiability of the function f where $f(x) = \begin{cases} x^2 + x & \text{when } x \leq 1 \\ 2x & \text{when } x > 1 \end{cases}$ at $x = 1$

Solu:

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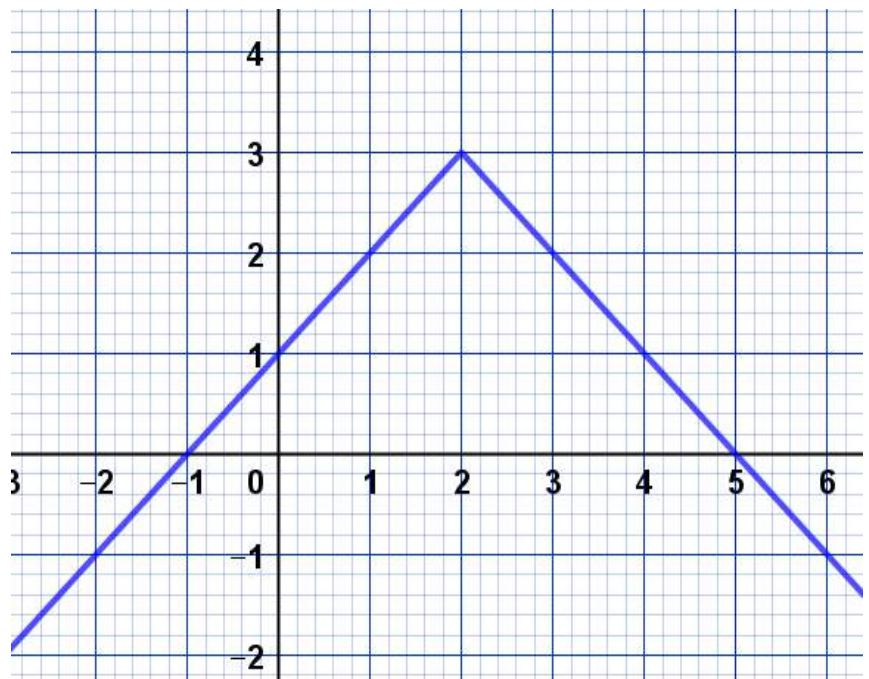
10) The opposite figure:

represents the curve of the function f .

Prove that f is not differentiable at

$x = 2$.

Solu:



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رياضيات بحتة لغات ٢ ث علمي - الاداء المنزلي - الاسبوع الثالث

Exercises on the Arithmetic Sequence

1) Find the number of terms of the arithmetic sequence: (63 , 59 , 55 , , - 133)

Solu:

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2) Find the order and the value of the first negative term in the arithmetic sequence
(49 , 45 , 41 ,)

Solu:

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3) Find the order and the value of the first term whose value is greater than 150 in the arithmetic sequence (4 , 9 , 14 ,)

Solu:

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4) (T_n) is an arithmetic sequence in which $T_1 + T_2 = 9$, $T_5 = 22$. Find this sequence

Solu:

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5) Insert 16 arithmetic means between 27 , – 24

Solu:

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Exercises on Rules of Derivative

6) By using definition of the derivative, find the first derivative of the function $f : f(x) = x^2$. then find the measure of the positive angle that the tangent to the curve makes with the positive direction of the x-axis at the point (– 1 , 1) to the nearest minute.

Solu:

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7) Discuss the differentiability of the function f where $f(x) = \begin{cases} x - x^2 & \text{when } x \leq 2 \\ 3x - 4 & \text{when } x > 2 \end{cases}$ at $x = 2$

Solu:

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8) If the function f is differentiable at $x = 1$, then find the value of a where:

$$f(x) = \begin{cases} ax + 2 & \text{when } x < 1 \\ x^2 - 2x + 3 & \text{when } x \geq 1 \end{cases}$$

Solu:

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9) Discuss the differentiability of the function f where $f(x) = \begin{cases} x^2 + 2x & \text{when } x \leq 0 \\ 2x & \text{when } x > 0 \end{cases}$ at $x = 0$

Solu:

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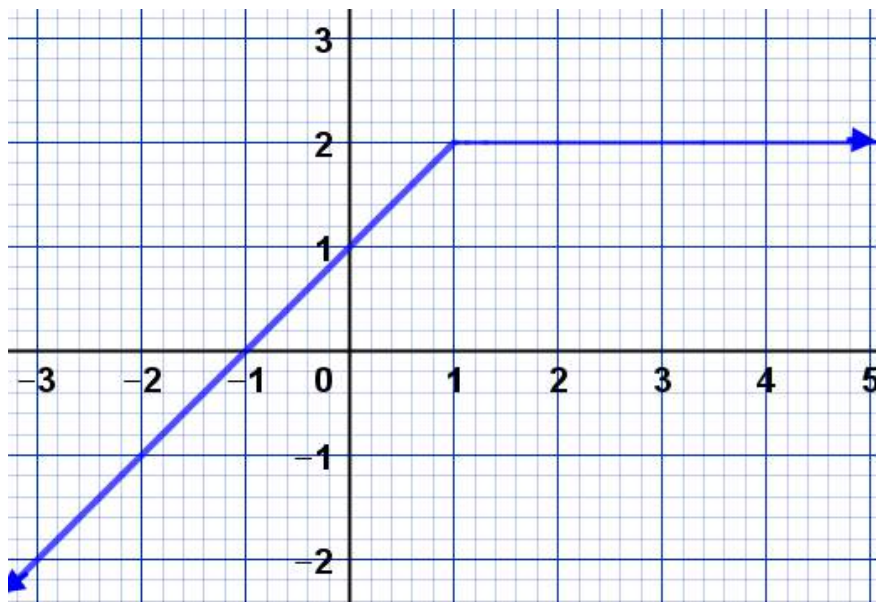
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10) The opposite figure represents the curve of the function f .
Prove that f is not differentiable at $x = 1$.



Solu:

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رياضيات بحتة لغات ٢ ث علمي – التقييم الإِسبوعي - الإِسبوع الثالث

The first group:

- 1) Find the order and the value of the first negative term in the arithmetic sequence
(59 , 53 , 47 ,)

Solu:

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- 2) Find the arithmetic sequence whose fifth term = 21 , and its tenth term = three times its second term.

Solu:

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- 3) insert 7 arithmetic means between: - 24 , 16

Solu:

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- 4) If the function f is differentiable at $x = 1$, then find the value of a where:

$$f(x) = \begin{cases} ax + 5 & \text{when } x < 1 \\ x^3 - x & \text{when } x \geq 1 \end{cases}$$

Solu:

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- 5) Discuss the differentiability of the function f where $f(x) = \begin{cases} x^2 + x & \text{when } x \leq 2 \\ 5x - 4 & \text{when } x > 2 \end{cases}$ at $x = 2$

Solu:

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The second group:

1) Find the order and the value of the first negative term in the arithmetic sequence
(62 , 57 , 52 ,)

Solu:

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2) An arithmetic sequence its fourth term = 11 , and the sum of its fifth and ninth terms equals 40 , find the sequence

Solu:

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3) insert 5 arithmetic means between 6 , 48

Solu:

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4) If the function f is differentiable at $x = 1$, then find the value of a where:

$$f(x) = \begin{cases} ax - 6 & \text{when } x < 1 \\ x^2 - x - 1 & \text{when } x \geq 1 \end{cases}$$

Solu:

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5) Discuss the differentiability of the function f where $f(x) = \begin{cases} x^2 - x & \text{when } x \leq 2 \\ 3x - 4 & \text{when } x > 2 \end{cases}$ at $x = 2$

Solu:

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The Third group:

- 1) Find the order and the value of the first negative term in the arithmetic sequence
(71 , 67 , 63 ,)

Solu:

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- 2) An arithmetic sequence, its ninth term = 25 , and the arithmetic mean between its third and fifth terms is 10. Find this sequence.

Solu:

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- 3) Insert 9 arithmetic means between 12 , 60

Solu:

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- 4) If the function f is differentiable at $x = 1$, then find the value of a where:

$$f(x) = \begin{cases} ax - 1 & \text{when } x < 1 \\ x^2 + 3x & \text{when } x \geq 1 \end{cases}$$

Solu:

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- 5) Discuss the differentiability of the function f where $f(x) = \begin{cases} x^2 + 2x & \text{when } x \leq 1 \\ 4x - 1 & \text{when } x > 1 \end{cases}$ at $x = 1$

Solu:

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④ الرياضيات البحتة لغات - للصف الثاني الثانوي علمي الأداء الصف الرابع الأسبوع ④

Exercises on the Arithmetic Series

1) Find the number of terms of the arithmetic sequence (2 , 5 , 8 , ,80)

Solu:
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2) Find the order and the value of the first negative term in the arithmetic sequence (67, 64, 61,)

Solu:
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3) Find the order and the value of the first term whose value is greater than 180 in the arithmetic sequence (3,7,11,)

Solu:
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4) Show that the sequence $(T_n) = 2n + 1$ is an arithmetic sequence , then find its tenth term .

Solu:
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5) Show that the sequence $(T_n) = 3-2n$ is an arithmetic sequence , then find the order of the term whose value is -17

Solu:

Exercises on Rules of Derivative

6) Find $\frac{dy}{dx}$ in each of the following:

a) $y = x^9$

b) $y = x^{\frac{3}{4}}$

c) $y = 7\pi$

Solu:

7) Find $\frac{dy}{dx}$ in each of the following:

a) $y = \sqrt{x}$

b) $y = \frac{5}{x^3}$

c) $y = \pi^2$

Solu:

8) Find $\frac{dy}{dx}$ in each of the following:

a) $y = 7x^3$

b) $y = \frac{4}{3} \pi x^3$

Solu:



Exercises on Trig. fun. of sum of 2 angles

9) If A, B are two acute angles where: $\tan A + \tan B = \frac{5}{6}$, $\tan A \times \tan B = \frac{1}{6}$.

then find $\tan (A + B)$

Solu:

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10) If $\frac{\sin x \cos 15 + \cos x \sin 15}{\cos x \cos 15 - \sin x \sin 15} = 1$, then find the value of x° (where x° is an acute angle)

Solu:

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④ الرياضيات البحتة لغات - للصف الثاني الثانوي علمي الأداء المنزلي الأسبوع الرابع ④

Exercises on the Arithmetic Series

1) Find the number of terms of the arithmetic sequence (3 , 6 , 9 , , 99)

Solu:

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2) Find the order and the value of the first negative term in the arithmetic sequence (60, 55, 50,)

Solu:

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3) Find the order and the value of the first term whose value is greater than 100 in the arithmetic sequence (3, 7, 11,)

Solu:

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4) Show that the sequence $(T_n) = 4n + 3$ is an arithmetic sequence, then find its seventh term.

Solu:

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5) Show that the sequence $(T_n) = 5 - n$ is an arithmetic sequence , then find the order of the term whose value is -11

Solu:

Exercises on Rules of Derivative

6) Find $\frac{dy}{dx}$ in each of the following:

a) $y = x^7$

b) $y = x^{\frac{3}{4}}$

c) $y = 2\pi$

Solu:

7) Find $\frac{dy}{dx}$ in each of the following:

a) $y = \sqrt{x^3}$

b) $y = \frac{5}{x^7}$

c) $y = \pi^3$

Solu:

8) Find $\frac{dy}{dx}$ in each of the following:

a) $y = 5x^4$

b) $y = 4\pi x^2$

Solu:



Exercises on Trig. fun. of sum of 2 angles

9) If A, B are two acute angles where $\tan A = \frac{1}{2}$, $\tan B = \frac{1}{3}$, then find $\tan (A + B)$

Solu:

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10) If $\sin x \cos 4x + \cos x \sin 4x = \frac{1}{2}$, then find x° (such that x° is a positive acute angle)

Solu:

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④ الرياضيات البحتة لغات - للصف الثاني الثانوي علمي التقييمات الأسبوعية الأسبوع الرابع ④

The first group:

1) Find the number of terms of the arithmetic sequence (2, 4, 6, ,144)

Solu:

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2) Show that the sequence $(T_n) = 3n + 4$ is an arithmetic sequence, then find its eleventh term.

Solu:

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3) Find $\frac{dy}{dx}$ if $y = x^{\frac{3}{5}}$

Solu:

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4) Find $\frac{dy}{dx}$ if $y = \pi x^2$

Solu:

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5 If $\cos 3x \cos 2x + \sin 3x \sin 2x = \frac{1}{2}$, then find x° (such that x° is a positive acute angle)

Solu:

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The second group:

1) Find the number of terms of the arithmetic sequence (1, 3, 5, ,133)

Solu:
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2) Show that the sequence $(T_n) = 4n + 3$ is an arithmetic sequence, then find its twelfth term.

Solu:
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3) Find $\frac{dy}{dx}$ if $y = x^{\frac{3}{4}}$

Solu:
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4) Find $\frac{dy}{dx}$ if $y = 2\pi x$

Solu:
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5 If $\cos 3x \cos 2x - \sin 3x \sin 2x = \frac{1}{2}$, then find x° (such that x° is a positive acute angle)

Solu:
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The third group:

1) Find the number of terms of the arithmetic sequence (5, 10, 15, ,155)

Solu:
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2) Show that the sequence $(T_n) = 7n + 1$ is an arithmetic sequence, then find its seventh term.

Solu:
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3) Find $\frac{dy}{dx}$ if $y = x^{\frac{4}{3}}$

Solu:
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4) Find $\frac{dy}{dx}$ if $y = 6x^2$

Solu:
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5 If $\cos 5x \cos 4x - \sin 5x \sin 4x = 1$, then find x° (such that x° is a positive acute angle)

Solu:
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⑤ الرياضيات البحتة لغات - للصف الثاني الثانوي علمي الأداء الصفی الأسبوع الخامس ⑤

First: Algebra- the sequences and Series:

- 1) An arithmetic sequence its second term equals 8 and its ninth term equals – 13. Find the sequence, then find its seventh term.

Solu:

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- 2) Insert 20 arithmetic means between 14 and 77.

Solu:

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- 3) If $x, 7, 10, y$ are four consecutive terms in an arithmetic sequence, then find x and y .

Solu:

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- 4) An arithmetic sequence its second term equals 11 and its eleventh term equals 8, then find its eighth term.

Solu:

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- 5) If we insert 10 arithmetic means between 2 and -20 ,then find the fourth mean.

Solu:

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Second: Calculus and integration -Unit three

6) If $y = 5x^3 + 4x - 7$, Find $\frac{dy}{dx}$

Solu:

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7) If $y = 2x^4(8x + 3)$, Find $\frac{dy}{dx}$

Solu:

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8) If $y = (5x^3 - x)(2x^2 - 1)$, Find $\frac{dy}{dx}$

Solu:

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Third: Trigonometry-Unit four

9) ABC is a triangle in which $\tan A = \frac{3}{4}$ and $\tan B = \frac{1}{7}$, find without using calculator $m(\angle C)$.

Solu:

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10) If $\sin A = \frac{3}{5}$, $\cos B = \frac{5}{13}$ (such that A and B are two acute angles), then find $\sin(A+B)$ and $\cos(A-B)$

Solu:

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⑤ الرياضيات البحتة لغات - للصف الثاني الثانوي علمي الأداء المنزلي الأسبوع الخامس ⑤

First: Algebra- the sequences and Series:

1) An arithmetic sequence its first term equals 7 and its seventh term equals 19. Find the sequence, then find its fourth term.

Solu:
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2) Insert 20 arithmetic means between 15 and 78.

Solu:
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3) If $x, 6, 11, y$ are four consecutive terms in an arithmetic sequence, then find x and y .

Solu:
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4) An arithmetic sequence its sixth term equals 13 and its common difference equals 2, then find the sequence.

Solu:
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5) If we insert 10 arithmetic means between 2 and -20, then find the fourth mean.

Solu:
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Second: Calculus and integration -Unit three

6) If $y = 8x^4 + 2x^3 - 1$, Find $\frac{dy}{dx}$

Solu:

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7) If $y = 3x^5(4x - 7)$, Find $\frac{dy}{dx}$

Solu:

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8) If $y = (4x^2 - 3x)(x^2 + 6)$, Find $\frac{dy}{dx}$

Solu:

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Third: Trigonometry-Unit four

9) ABC is a triangle in which $\tan A = \frac{1}{2}$ and $\tan B = \frac{1}{3}$, find without using calculator $m(\angle C)$.

Solu:

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10) If $\cos A = \frac{3}{5}$ (such that A is an acute angles), then find $\sin(A + 30^\circ)$

Solu:

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⑤ الرياضيات البحتة لغات - للصف الثاني الثانوي علمي التقييمات الأسبوعية الأسبوع الخامس ⑤

The first group:

- 1) An arithmetic sequence its third term = 7 and its fourth term = 10.

Find the sequence, then find its ninth term.

Solu:

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- 2) Insert 20 arithmetic means between 17 and 80.

Solu:

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- 3) If $y = 7x^3 + 6x^2 - 4$, Find $\frac{dy}{dx}$

Solu:

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- 4) If $y = (4x^2 - 3x)(x^2 + 6)$, Find $\frac{dy}{dx}$

Solu:

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.....
.....

- 5) If $\sin A = \frac{3}{5}$ (such that A is an acute angles), then find $\cos (A+30^\circ)$

Solu:

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The second group:

- 1) An arithmetic sequence its third term = 8 and its fourth term = 11.
Find the sequence, then find its ninth term.

Solu:

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- 2) Insert 20 arithmetic means between 18 and 81.

Solu:

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- 3) If $y = 8x^4 + 7x^3 - 5$, Find $\frac{dy}{dx}$

Solu:

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- 4) If $y = (x^3 - x)(2x + 3)$, Find $\frac{dy}{dx}$

Solu:

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- 5) If $\sin A = \frac{3}{5}$ (such that A is an acute angles), then find $\cos (A + 45^\circ)$

Solu:

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The third group:

1) 1) An arithmetic sequence its third term = 9 and its fourth term = 12.

Find the sequence, then find its ninth term.

Solu:

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2) Insert 20 arithmetic means between 20 and 83.

Solu:

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3) If $y = 9x^5 + 5x^3 - 2$, Find $\frac{dy}{dx}$

Solu:

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4) If $y = (x^4 - 2x)(4x + 6)$, Find $\frac{dy}{dx}$

Solu:

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5) If $\sin A = \frac{3}{5}$ (such that A is an acute angles), then find $\cos (A + 60^\circ)$

Solu:

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⑥ الرياضيات البحتة لغات - للصف الثاني الثانوي علمي الأداء الصفى الأسبوع السادس ⑥

First: Exercises on arithmetic series:

1) Find the sum of the first 30 terms of the arithmetic sequence (4,10,16,.....)

Solu:
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2) In the arithmetic sequence (5, 8,11, ,.....) ,find the sum of 10 terms starting from its T_7

Solu:
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3) Find the sum of terms of the sequence (11, 15, 19,),87)

Solu:
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4) An arithmetic sequence its middle term is $T_{11} = 60$, find the sum of this sequence.

Solu:
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5) In the arithmetic sequence $(T_n) = (55,51,47,.....)$,find the greatest number of its terms could be taken starting from its first term to get the sum greater than zero.

Solu:
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6) An arithmetic sequence its first term equals 19 , its last term equals -41 and its sum equals -231, find this sequence.

Solu:
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Second: Exercises on rules of derivatives

7) If $y = \frac{-7}{x+1}$, Find $\frac{dy}{dx}$

Solu:

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8) If f is a function: $f(x) = \frac{x^2-1}{x+2}$, then Find $f'(x)$

Solu:

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9) If $y = (x^2 - 4x - 6)^5$, Find $\frac{dy}{dx}$

Solu:

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10) If $y = \frac{z-1}{z+1}$ and $z = \frac{x+1}{x-1}$, then find $\frac{dy}{dx}$ at $x = 2$

Solu:

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⑥ الرياضيات البحتة لغات - للصف الثاني الثانوي علمي الأداء المنزلي الأسبوع السادس ⑥

First: Exercises on arithmetic series:

1) Find the sum of the first 30 terms of the arithmetic sequence (5,8,11,.....)

Solu:

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2) In the arithmetic sequence (90, 85,80,), find the sum of 20 terms starting from its T_{10}

Solu:

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3) Find the sum of terms of the sequence (8, 12, 16, ,88)

Solu:

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4) An arithmetic sequence its middle term is $T_{15} = 30$, find the sum of this sequence.

Solu:

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5) In the arithmetic sequence $(T_n) = (50,45,40,.....)$, find the greatest number of its terms could be taken starting from its first term to get the maximum sum.

Solu:

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6) An arithmetic sequence its first term equals 5 , its last term equals 105 and its sum equals 1155, find this sequence.

Solu:

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Second: Exercises on rules of derivatives

7) If $y = \frac{-1}{x+4}$, Find $\frac{dy}{dx}$

Solu:

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8) If f is a function: $f(x) = \frac{x-5}{x+7}$, then Find $f'(x)$

Solu:

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9) If $y = (x^2 - 3x - 1)^7$, Find $\frac{dy}{dx}$

Solu:

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10) If $y = z + \frac{1}{z}$ and $z = 3x + 5$, then find $\frac{dy}{dx}$ at $x = 1$

Solu:

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⑥ الرياضيات البحتة لغات - للصف الثاني الثانوي علمي التقييمات الأسبوعية الأسبوع السادس ⑥

The first group:

1) Find the sum of the first 20 terms of the arithmetic sequence (1,3,5,.....)

Solu:

2) In the arithmetic sequence (100, 90,80, ,.....) ,find the sum of 10 terms starting from its T_7

Solu:

3) Find the sum of terms of the sequence (3, 6, 9,99)

Solu:

4) If $y = \frac{x+1}{x+2}$, Find $\frac{dy}{dx}$

Solu:

5) If $y = (x^2 - 5x + 1)^3$, Find $\frac{dy}{dx}$

Solu:



The second group:

1) Find the sum of the first 20 terms of the arithmetic sequence (2,4,6,.....)

Solu:

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2) In the arithmetic sequence (50, 45,40, ,.....) ,find the sum of 10 terms starting from its T_5

Solu:

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3) Find the sum of terms of the sequence (6, 12, 18,96)

Solu:

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4) If $y = \frac{x+2}{x+3}$, Find $\frac{dy}{dx}$

Solu:

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5) If $y = (x^2 - 4x + 1)^5$, Find $\frac{dy}{dx}$

Solu:

.....



The third group:

1) Find the sum of the first 20 terms of the arithmetic sequence (7,9,11,.....)

Solu:

2) In the arithmetic sequence (33, 30,27, ,.....) ,find the sum of 10 terms starting from its T_9

Solu:

3) Find the sum of terms of the sequence (4, 8, 12,104)

Solu:

4) If $y = \frac{x+5}{x+6}$, Find $\frac{dy}{dx}$

Solu:

5) If $y = (x^2 - 7x + 1)^8$, Find $\frac{dy}{dx}$

Solu:

$$\begin{aligned}T_1 &= 1 \\T_2 &= 7 \\T_3 &= 17 \\T_4 &= 31\end{aligned}$$

2) Write the general term of the sequence of the following even numbers: (2, 4, 6, 8,)

Solu:

$$T_n = 2n$$

3) Write down the first six terms of the sequence (T_n) where: $T_{n+2} = T_{n+1} + T_n$ where $n \geq 1$,

$$T_1 = 3 \text{ and } T_2 = 4.$$

Solu:

2) Write the general term of the sequence of the following even numbers: (2, 4, 6, 8,)

Solu:

$$T_n = 2n$$

3) Write down the first six terms of the sequence (T_n) where: $T_{n+2} = T_{n+1} + T_n$ where $n \geq 1$, $T_1 = 3$ and $T_2 = 4$.

Solu:

(3, 4, 7, 11, 18, 29, ...)

4) Prove that the sequence (T_n) : $T_n = 3n + 2$ is an increasing sequence for all values of n

Solu:

$$T_1 = 5$$

$$T_2 = 8$$

$$T_3 = 11$$

$$T_n = 3n + 2$$

$$T_{n+1} = 3(n+1) + 2 = 3n + 3 + 2$$

$$T_{n+1} - T_n = 3 > 0$$

5) Find the eighth term of the sequence whose general term is given by the relation:

$$T_n = n - n^2$$

Solu:

$$T_2 = 8 \downarrow$$

$$T_3 = 11$$

$$T_{n+1} = 3(n+1) + 2 = 3n + 3 + 2$$

$$T_{n+1} - T_n = 3 > 0$$

5) Find the eighth term of the sequence whose general term is given by the relation:

$$T_n = n - n^2$$

Solu:

$$T_8 = 8 - (8)^2$$

$$8 - 64 = -56$$

Exercises on the Angles of elevation and depression

6) From the top of a tower 65 meters high, the angles of depression of points A and B were measured from the horizontal plane and were 32° , $12^\circ 21'$ respectively. If the point D

Exercises on the Angles of elevation and depression

- 6) From the top of a tower 65 meters high, the angles of depression of points A and B were measured from the horizontal plane and were 32° , $12^\circ 21'$ respectively. If the point D represents the base of the tower. $A \in \overline{BD}$. Find the length of $\overline{AB}$ to the nearest meter.

Solu:

In $\triangle OAD$

$$\sin 32^\circ = \frac{65}{AO}$$

$$AO = \frac{65}{\sin 32^\circ}$$

In $\triangle ABO$

$$\frac{AB}{\sin 19^\circ 39'} = \frac{32 \sin 65^\circ}{\sin 12^\circ 21'}$$

$$AB = \frac{32 \times \sin 65^\circ \times \sin 19^\circ 39'}{\sin 12^\circ 21'}$$





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7) A house of height of 12 meters is built on a hill. From a point on the ground, the angles of elevation of the top and base of the house were measured. Their measurements were found to be 32° and 24° respectively. Find the height of the hill to the nearest meter.

Solu:

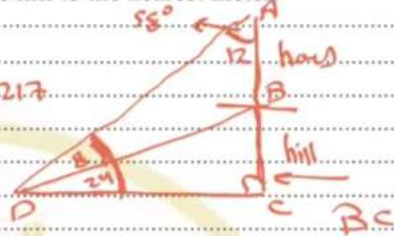
In $\triangle ABD$

$$\frac{BD}{\sin 58^\circ} = \frac{12}{\sin 8^\circ} \quad BD = 73.1217$$

In $\triangle BCD$

$$\frac{BC}{\sin 24^\circ} = \frac{73.1217}{\sin 90^\circ}$$

$$BC = 29.7 \\ \approx 30 \text{ m}$$



Exercises on the Variation, Average Rate of Change and Rate of Change

) If f is a function: $f(x) = 4x^2 + x - 2$ and x changed from 2 to $2 + h$, then find the function of variation V , then calculate the variation in f when: $h = 0.3$

solu:

$$V(h) = f(x+h) - f(x) \quad \text{at } x=2$$

$$V(h) = f(2+h) - f(2)$$

$$= 4(2+h)^2 + (2+h) - 2 - [16 + 2 - 2]$$

$$16 + 4h^2 + 16h + 2 + h - 2 - 16$$

$$4h^2 + 17h$$

$$h = 0.3$$

$$4(0.3)^2 + 17 \times 0.3 = \checkmark$$



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9) If f is a function $f(x) = x^2 - 5$, find the average rate of change function in f when $x = 2$, then calculate $A(0.2)$

Solu:

$$A(h) = \frac{f(x+h) - f(x)}{h}$$

$$\frac{f(2+h) - f(2)}{h} = \frac{(2+h)^2 - 5 - [4 - 5]}{h}$$

$$A(h) = \frac{4 + h^2 + 4h - 5 - 4 + 5}{h} = \frac{h(h+4)}{h} = h+4$$

$$A(0.2) = 0.2 + 4 = 4.2$$

10) If f is a function $f(x) = x^3$, find the average rate of change function in f when $x = x$

$$A(h) = \frac{A+h^2+4h-5-8+5}{h} = \frac{h(h+4)}{h} = h+4$$

$$A(0.2) = 0.2 + 4 = 4.2$$

10) If f is a function $f(x) = x^3$ find the average rate of change function in f when $x = x_1$, then find the value of this average when $x = 2$

Solu:

$$A(h) = \frac{f(x_1+h) - f(x_1)}{h} = \frac{(x_1+h)^3 - x_1^3}{h}$$

$$\frac{(2+h)^3 - 8}{h}$$

$$\frac{(2+h-2)((2+h)^2 + 2(2+h) + 4)}{h}$$

$$\begin{aligned} & (2+h)^2 + 2(2+h) + 4 \\ & 4 + h^2 + 4h + 4 + 2h + 4 \\ & h^2 + 6h + 12 \end{aligned}$$



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1 الرياضيات البحتة لغات . للصف الثاني الثانوي علمي الأداء المنزلى الأسبوع الأول

Exercises on the concept and the properties of Sequences

1) Write down the first five terms of the sequence whose n^{th} term is given by the relation:

$$T_n = n^2 - 2$$

Solu:

$$T_1 = -1$$

$$T_2 = 2$$

$$T_3 = 7$$

$$T_4 = 15$$

$$T_5 = 23$$

2) Write the general term of the sequence of the following odd numbers: (1 , 3 , 5 , 7 ,)

Solu:

2) Write the general term of the sequence of the following odd numbers: $(1, 3, 5, 7, \dots)$

Solu:

$$T_n = 2n - 1$$

3) Write down the first six terms of the sequence (T_n) where: $T_{n+2} = T_{n+1} + T_n$, where $n \geq 1$, $T_1 = 2$ and $T_2 = 3$.

Solu:

$(2, 3, 5, 8, 13, 21, 35, \dots)$

4) Prove that the sequence (T_n) : $T_n = \frac{1}{3n-1}$ is a decreasing sequence for all values of n

Solu:

$T_1 = 2$ and $T_2 = 3$.

Solu:

$$(2, 3, 5, 8, 13, 21, 35, \dots)$$

4) Prove that the sequence (T_n) : $T_n = \frac{1}{3n-1}$ is a decreasing sequence for all values of n

Solu:

$$T_1 = \frac{1}{2}, T_2 = \frac{1}{5}, T_3 = \frac{1}{8}$$

$$\left(\frac{1}{2}, \frac{1}{5}, \frac{1}{8}, \dots\right)$$

$$\frac{1}{5} - \frac{1}{2} < 0$$

5) Find the seventh term of the sequence whose general term is given by the relation:

$$T_n = 2n^2 + 3$$

Solu:

$$T_7 = 2(49) + 3$$

$$98 + 3$$

$$101$$

Exercises on the Angles of elevation and depression

6) From a point on the surface of the earth the angle of elevation of the top of a tower was observed and found to be 25° . Then the observer walked a distance of 57 meters in a straight horizontal line towards the base of the tower and found that the angle of elevation of the top of the tower was $52^\circ 30'$. Find the height of the tower "approximate to the nearest meter".

Solu:

Exercises on the Angles of elevation and depression

6) From a point on the surface of the earth the angle of elevation of the top of a tower was observed and found to be 25° . Then the observer walked a distance of 57 meters in a straight horizontal line towards the base of the tower and found that the angle of elevation of the top of the tower was $52^\circ 30'$. Find the height of the tower "approximate to the nearest meter".

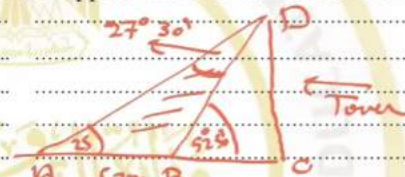
Solu:

$$\text{In } \triangle DAB$$
$$\frac{57}{\sin 27^\circ 30'} = \frac{DB}{\sin 25^\circ}$$

$$DB = 52.16$$

$$\text{In } \triangle DCB$$

$$\frac{DC}{\sin 52^\circ 30'}$$



$$DC = 52.16 \times \sin 52^\circ 30'$$

7) A person observed the angle of elevation of the top of a tower from a point on the surface of the earth and found that its measurement was 20° . Then he walked on a horizontal path towards

4m ΔDCB

$$\frac{DC}{\sin 52.30^\circ} = \frac{52.16}{1}$$

$$DC = 52.16 \times \sin 52.30^\circ$$

7) A person observed the angle of elevation of the top of a tower from a point on the surface of the earth and found that its measurement was 20° . Then he walked on a horizontal path towards the base of the tower for a distance of 50 meters and observed the angle of elevation of the top of the tower again and found that its measurement was 42° . Find the height of the tower "approximate to the nearest meter"

Solu:

4m ΔADC

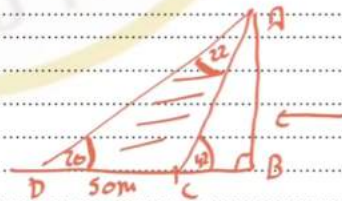
$$\frac{50}{\sin 22^\circ} = \frac{AC}{\sin 20^\circ}$$

$$AC = \frac{50 \sin 20^\circ}{\sin 22^\circ} = 45.65$$

4m ΔABD

$$\frac{45.65}{1} = \frac{AB}{\sin 42^\circ}$$

$$AB = 45.65 \times \sin 42^\circ$$





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Exercises on the Variation, Average Rate of Chang and Rate of Change

8) If f is a function $f(x) = 3x^2 + x - 2$ and x varies from 2 to $2 + h$, then find the function of variation V , then calculate the change in f when: $h = 0.3$

Solu:

$$V(h) = f(2+h) - f(2)$$

$$3(2+h)^2 + (2+h) - 2 - [12 + 2 - 2]$$

$$12 + 3h^2 + 12h + 2 + h - 2 - 12$$

$$3h^2 + 13h$$

$$V(0.3) = 3(0.3)^2 + 13 \times 0.3$$

9) If f is a function, $f(x) = x^2 + 1$, find the average rate of change function in f when $x = 2$.

$$v(0.3) = 3(0.3)^2 + 13 \times 0.3$$

9) If f is a function, $f(x) = x^2 + 1$, find the average rate of change function in f when $x = 2$, then calculate $A(0.3)$

Solu:

$$A(h) = \frac{f(x+h) - f(x)}{h} = \frac{f(2+h) - f(2)}{h}$$

$$\frac{f(2.3) - f(2)}{0.3} = \frac{(2.3)^2 + 1 - [4 + 1]}{0.3}$$

10) If f is a function $f(x) = x^3$, find the average rate of change function in f when $x = x_1$, then find the value of this average when $x = 4$

Solu:

10) If f is a function $f(x) = x^3$, find the average rate of change function in f when $x = x_1$, then find the value of this average when $x = 4$

Solu:

$$A(h) = \frac{f(x+h) - f(x)}{h}$$

$$\frac{(x+h)^3 - x^3}{h} = \frac{(x+h-x)(x^2 + x(x+h) + x^2)}{h}$$

$$(4+h)^2 + 4(4+h) + 16$$

(59 , 53 , 47 ,)

Solu:

$$T_n < 0$$

$$a + (n-1)d < 0$$

$$59 - 6n + 6 < 0$$

$$65 < 6n$$

$$10.83 < n$$

$$a = 59$$

$$d = -6$$

$$T_{11} = a + 10d$$

$$= 59 - 60 = -1$$

2) Find the arithmetic sequence whose fifth term = 21 , and its tenth term = three times its second term.

Solu:

3) insert 7 arithmetic means between: - 24 , 16

Solu:

4) If the function f is differentiable at $x = 1$, then find the value of a where:

(59 , 53 , 47 ,)

Solu:

$$\begin{aligned}T_n &< 0 \\a + (n-1)d &< 0 \\59 - 6n + 6 &< 0 \\65 &< 6n \\10.8\bar{3} &< n\end{aligned}$$

$$a = 59$$

$$d = -6$$

$$\begin{aligned}T_{11} &= a + 10d \\&= 59 - 60 = -1\end{aligned}$$

2) Find the arithmetic sequence whose fifth term = 21 , and its tenth term = three times its second term.

Solu:

$$\begin{aligned}a + 4d &= 21 \quad (1) \\a + 9d &= 3(a + d) \\a + 9d &= 3a + 3d \\2a &= 6d \\a &= 3d\end{aligned}$$

$$7d = 21$$

$$d = 3$$

$$a = 9$$

$$(9, 12, 15, \dots)$$

3) insert 7 arithmetic means between: - 24 , 16

Solu:

4) If the function f is differentiable at $x = 1$, then find the value of a where:

$$\begin{aligned} a + a.d &= 3(a+d) \\ a + a.d &= 3a + 3d \\ 2a &= 6d \\ a &= 3d \end{aligned}$$

$$\begin{aligned} d &= 3 \\ a &= 9 \\ (9, 12, 15, \dots) \end{aligned}$$

3) insert 7 arithmetic means between: -24 , 16

Solu:

$$\begin{aligned} (-24) & \quad (16) \\ (-19, -14, -9, \dots) \end{aligned}$$

$$\begin{aligned} a &= -24 \\ a + 8d &= 16 \\ -24 + 8d &= 16 \\ 8d &= 40 \\ d &= 5 \end{aligned}$$

4) If the function f is differentiable at $x = 1$, then find the value of a where:

$$f(x) = \begin{cases} ax + 5 & \text{when } x < 1 \\ x^3 - x + 7 & \text{when } x \geq 1 \end{cases}$$

Solu:

5) Discuss the differentiability of the function f where $f(x) = \begin{cases} x^2 + x & \text{when } x \leq 2 \\ \end{cases}$ at $x = 2$

$$(-17, -17, -9, \dots)$$

$$\begin{aligned} -24 + 8d &= 16 \\ 8d &= 40 \\ d &= 5 \end{aligned}$$

The function f is differentiable at $x = 1$, then find the value of a where:

$$f(x) = \begin{cases} ax + 5 & \text{when } x < 1 \\ x^3 - x + 7 & \text{when } x \geq 1 \end{cases}$$

$$a + 5 = 1 - 1 + 7$$

$$a = 2$$

Discuss the differentiability of the function f where $f(x) = \begin{cases} x^2 + x & \text{when } x \leq 2 \\ 5x - 4 & \text{when } x > 2 \end{cases}$ at $x = 2$

$$f(2^-) = 4 + 2 = 6$$

$$f(2^+) = 6$$

$$f(2) = 6$$

$$f'(2^-) = 2x + 1 = 5$$

$$f'(2^+) = 5$$

$$f'(2^-) = f'(2^+)$$

diff at $x = 2$

(8)

The

1) Find

(6

Solu:

2) Ar

40, f

Solu:

1) Find the order and the value of the first negative term in the arithmetic sequence

(62 , 57 , 52 ,)

Solu:

$$T_n < 0$$

$$a = 62$$

$$a + (n-1)d < 0$$

$$T_n = a + (n-1)d$$

$$d = -5$$

$$62 - 5n + 5 < 0$$

$$= 62 - 65 = -3$$

$$67 < 5n$$

$$13.4 < n$$

2) An arithmetic sequence its fourth term = 11 , and the sum of its fifth and ninth terms equals 40 , find the sequence

Solu:

3) insert 5 arithmetic means between 6 , 48

Solu:

$$62 - 5n + 5 \leq 0 \quad \Rightarrow \quad 62 - 5n \leq -5$$

$$67 \leq 5n$$

$$13.4 \leq n$$

2) An arithmetic sequence its fourth term = 11, and the sum of its fifth and ninth terms equals 40, find the sequence

Solu:

$$a + 3d = 11 \quad (1)$$

$$a + 4d + a + 8d = 40$$

$$2a + 12d = 40$$

$$a + 6d = 20 \quad (2)$$

$$3d = 9$$

$$d = 3 \text{ in } (1) \quad a = 2$$

$$A.S. (2, 5, 8, \dots)$$

3) insert 5 arithmetic means between 6, 48

Solu:

$$(6, \dots, 48)$$

$$a = 6$$

$$a + 6d = 48$$

$$6d = 42$$

$$d = 7$$

4) If the function f is differentiable at $x = 1$, then find the value of a where:

$$f(x) = \begin{cases} ax - 6 & \text{when } x < 1 \\ x^2 - x - 5 & \text{when } x \geq 1 \end{cases}$$

$$62 - 5n + 5 \leq 0 \quad \Rightarrow \quad 62 - 65 = -3$$

$$67 \leq 5n$$

$$13.4 \leq n$$

2) An arithmetic sequence its fourth term = 11, and the sum of its fifth and ninth terms equals 40, find the sequence

Solu:

$$a + 3d = 11 \quad (1)$$

$$a + 4d + a + 8d = 40$$

$$2a + 12d = 40$$

$$a + 6d = 20 \quad (2)$$

$$3d = 9$$

$$d = 3 \text{ in } (1) \quad a = 2$$

$$A.S. (2, 5, 8, \dots)$$

3) insert 5 arithmetic means between 6, 48

Solu:

$$(6, \dots, 48)$$

$$a = 6$$

$$a + 6d = 48$$

$$6d = 42$$

$$d = 7$$

$$\text{Means } (13, 20, 27, \dots)$$

4) If the function f is differentiable at $x = 1$, then find the value of a where:

$$f(x) = \begin{cases} ax - 6 & \text{when } x < 1 \\ x^2 - x - 5 & \text{when } x \geq 1 \end{cases}$$

4) If the function f is differentiable at $x = 1$, then find the value of a where:

$$f(x) = \begin{cases} ax - 6 & \text{when } x < 1 \\ x^2 - x - 5 & \text{when } x \geq 1 \end{cases}$$

Solu:

$$a - 6 = -5$$

$$a = 1$$

5) Discuss the differentiability of the function f where $f(x) = \begin{cases} x^2 - x & \text{when } x \leq 2 \\ 3x - 4 & \text{when } x > 2 \end{cases}$ at $x = 2$

Solu:

$$f(2^-) = 2$$

$$f(2^+) = 2$$

$$f(2) = 2$$

$$f(2) = 2 \times 1 = 2$$

$$f'(2^-) = 3$$

$$f'(2^+) = f'(2)$$

diff at $x = 2$

(71 , 67 , 63 ,)

Solu:

$$\begin{array}{l|l} T_n < 0 & a = 71 \\ a + (n-1)d < 0 & T_{19} = a + 18d \\ 71 - 4n + 4 < 0 & = 71 + 18 \times -4 \\ 75 < 4n & = 71 - 72 \\ 18.75 < n & = -1 \end{array}$$

2) An arithmetic sequence, its ninth term = 25 , and the arithmetic mean between its third and fifth terms is 10. Find this sequence.

Solu:

3) Insert 9 arithmetic means between 12 , 60

Solu:

4) If the function f is differentiable at $x = 1$, then find the value of a where:

(71, 67, 63,)

Solu:

$$\begin{array}{l|l} T_n < 0 & a = 71 \\ a + (n-1)d < 0 & T_{19} = a + 18d \\ 71 - 4n + 4 < 0 & = 71 + 18(-4) \\ 75 < 4n & = 71 - 72 \\ 18.75 < n & = -1 \end{array}$$

2) An arithmetic sequence, its ninth term = 25, and the arithmetic mean between its third and fifth terms is 10. Find this sequence.

Solu:

$$\begin{array}{l} a + 8d = 25 \quad (1) \\ a + 3d = 10 \quad (2) \\ \hline 5d = 15 \\ d = 3 \text{ in } (1) \\ a = 1 \end{array}$$
$$\frac{a+2d + a+4d}{2} = 10$$
$$A.S = (1, 4, 7, \dots)$$

3) Insert 9 arithmetic means between 12, 60

Solu:

4) If the function f is differentiable at $x = 1$, then find the value of a where:

$$a + 3d = 10 \quad (2) \quad (1) \quad 2$$

$$5d = 15$$

$$d = 3 \text{ in (1)}$$

$$a = 1$$

$$A.S = (1, 4, 7, \dots)$$

3) Insert 9 arithmetic means between 12, 60

Solu:

$$(12, \dots, 60)$$

$$(12, 8, 4, 0, \dots)$$

$$a = 12$$

$$a + 10d = 60$$

$$12 + 10d = 60$$

$$10d = 48$$

$$d = 4.8$$

4) If the function f is differentiable at $x = 1$, then find the value of a where:

$$f(x) = \begin{cases} ax - 1 & \text{when } x < 1 \\ x^2 + 3x & \text{when } x \geq 1 \end{cases}$$

Solu:

5) Discuss the differentiability of the function f where $f(x) = \begin{cases} x^2 + 2x & \text{when } x \leq 1 \\ 1 & \text{when } x > 1 \end{cases}$ at $x = 1$

$$(16.8, 16.8 + 4.8, \dots)$$

$$12 + 10d < 60$$

$$10d < 48$$

$$d < 4.8$$

4) If the function f is differentiable at $x = 1$, then find the value of a where:

$$f(x) = \begin{cases} ax - 1 & \text{when } x < 1 \\ x^2 + 3x & \text{when } x \geq 1 \end{cases}$$

Solu: $a - 1 = 4$
 $a = 5$

5) Discuss the differentiability of the function f where $f(x) = \begin{cases} x^2 + 2x & \text{when } x \leq 1 \\ 4x - 1 & \text{when } x > 1 \end{cases}$ at $x = 1$

Solu: $f(1^-) = 3$ $f(1^+) = 3$ $f(1) = 3$

$$f'(1^-) = 2x + 2 = 4$$

$$f'(1^+) = 4$$

diff is at $x = 1$

Solu:

$$T_n = a + (n-1)d$$

$$-133 = 63 - 4n + 4$$

$$4n = 63 + 4 + 133$$

$$4n = 200$$

$$n = 50$$

$$a = 63$$

$$d = -4$$

2) Find the order and the value of the first negative term in the arithmetic sequence

(49, 45, 41,)

Solu:

$$T_n < 0$$

$$a + (n-1)d < 0$$

$$n = 14$$

$$49 - 4n + 4 < 0$$

$$53 < 4n$$

$$13.25 < n$$

$$T_{14} = a + 13d$$

$$49 + 13(-4)$$

$$-3$$

3) Find the order and the value of the first term whose value is greater than 150 in the arithmetic sequence (4, 9, 14,)

Solu:

sequence (4 , 9 , 14 ,)

Solu:

$$T_n > 150$$

$$a + (n-1)d > 150$$

$$4 + 5n - 5 > 150$$

$$5n > 151$$

$$n > 30.2$$

$$n = 31$$

$$T_{31} = a + 30d$$

$$= 4 + 30 \times 5$$

$$= 154$$

4) (T_n) is an arithmetic sequence in which $T_1 + T_2 = 9$, $T_5 = 22$. Find this sequence

Solu:

$$a + a + d = 9$$

$$\begin{cases} 2a + d = 9 \quad (1) \\ a + 4d = 22 \quad \times -2 \\ \hline -2a - 8d = -44 \quad (2) \end{cases}$$

$$-7d = -35$$

$$\boxed{d = 5} \text{ in (1)}$$

(4)

$$2a + 5 = 9$$

$$2a = 4$$

$$a = 2$$

$$A.S = (2, 7, 12, \dots)$$



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5) Insert 16 arithmetic means between 27 , - 24

Solu:

$$(27, \dots, -24)$$

Means $(24, 21, 18, \dots)$

$$\begin{aligned} a &= 27 \\ T_{18} &= a + 17d = -24 \\ 27 + 17d &= -24 \\ 17d &= -51 \\ d &= -3 \end{aligned}$$

Exercises on Rules of Derivative

6) By using definition of the derivative, find the first derivative of the function $f : f(x) = x^2$.
then find the measure of the positive angle that the tangent to the curve makes with the positive

Exercises on Rules of Derivative

6) By using definition of the derivative, find the first derivative of the function $f: f(x) = x^2$. then find the measure of the positive angle that the tangent to the curve makes with the positive direction of the x-axis at the point $(-1, 1)$ to the nearest minute.

Solu:

$$\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{(x+h) - x} = \lim_{h \rightarrow 0} \frac{(x+h)^2 - x^2}{(x+h) - x} = 2x^{2-1} = 2x = m$$

$$\tan \theta = -2$$

$$\theta = 63.43$$

$$180 - 63.4349 \approx$$

7) Discuss the differentiability of the function f where $f(x) = \begin{cases} x - x^2 & \text{when } x \leq 2 \\ 3x - 4 & \text{when } x > 2 \end{cases}$ at $x = 2$

Solu:

$$\theta = 63.43$$

$$180 - 63.4349 \approx$$

7) Discuss the differentiability of the function f where $f(x) = \begin{cases} x - x^2 & \text{when } x \leq 2 \\ 3x - 4 & \text{when } x > 2 \end{cases}$ at $x = 2$

Solu:

$$f(2^-) = 2 - 4 = -2$$

$$f(2^+) = 2$$

$$f(2^-) \neq f(2^+)$$

Not diff. at $x = 2$

8) If the function f is differentiable at $x = 1$, then find the value of a where:

$$f(x) = \begin{cases} ax + 2 & \text{when } x < 1 \\ x^2 - 2x + 3 & \text{when } x \geq 1 \end{cases}$$

Solu: $ax + 2 = 1 - 2 + 3$
 $ax + 2 = 2$
 $a = 0$

9) Discuss the differentiability of the function f where $f(x) = \begin{cases} x^2 + 2x & \text{when } x \leq 0 \\ 2x & \text{when } x > 0 \end{cases}$ at $x = 0$

Solu:

9) Discuss the differentiability of the function f where $f(x) = \begin{cases} x^2 + 2x & \text{when } x \leq 0 \\ 2x & \text{when } x > 0 \end{cases}$ at $x = 0$

Solu:

$$\left. \begin{aligned} f(0^-) &= 0 \\ f(0^+) &= 0 \\ f(0) &= 0 \end{aligned} \right\}$$

The fun is Cont.

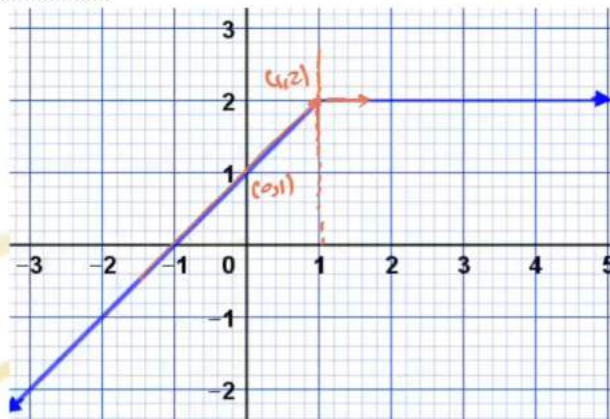
$$\left. \begin{aligned} f'(0^-) &= 2x + 2 = 2 \\ f'(0^+) &= 2 \end{aligned} \right\}$$

$$f'(0^-) = f'(0^+)$$

The fun is diff at $x = 0$

10) The opposite figure represents the curve of the function f .
Prove that f is not differentiable at $x = 1$.

Solu:

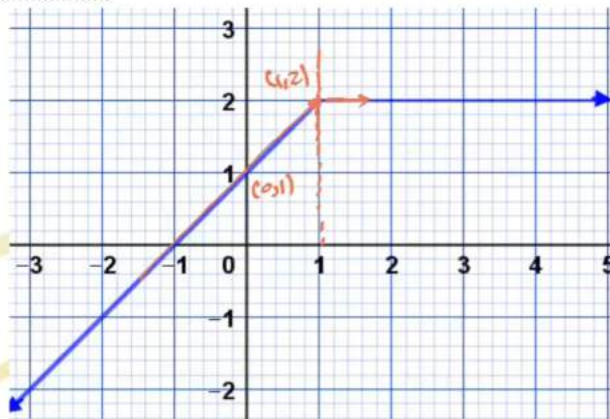


$$f'(1+) = 0$$

$$f'(1-) = \frac{1}{1} = 1$$

10) The opposite figure represents the curve of the function f .
Prove that f is not differentiable at $x = 1$.

Solu:



$$f'(1+) = 0$$

$$f'(1-) = \frac{1}{1} = 1$$

$$f'(1+) \neq f'(1-)$$

The first group:

1) Find the number of terms of the arithmetic sequence (2, 4, 6,, 144)

Solu:

$$a + (n-1)d = 144$$

$$a = 2$$

$$2 + 2n - 2 = 144$$

$$d = 2$$

$$n = 72$$

$$L = 144$$

2) Show that the sequence $(T_n) = 3n + 4$ is an arithmetic sequence, then find its eleventh term.

Solu:

$$T_{n+1} - T_n = d$$

$$3(n+1) + 4 - (3n + 4)$$

$$3n + 3 + 4 - 3n - 4 = 3$$

$$T_{11} = 3 \times 11 + 4 = 33 + 4 = 37$$

3) Find $\frac{dy}{dx}$ if $y = x^{\frac{3}{5}}$

Solu:

Solu:

$$T_{n+1} - T_n = d$$

$$3(n+1)+4 = (3n+4)$$

$$3n+3+4-3n-4 = (3)$$

$$T_{11} = 3 \times 11 + 4 = 33 + 4 = 37$$

3) Find $\frac{dy}{dx}$ if $y = x^{\frac{3}{5}}$

Solu:

$$y' = \frac{3}{5} x^{\frac{-2}{5}}$$

4) Find $\frac{dy}{dx}$ if $y = \pi x^2$

Solu:

$$\frac{dy}{dx} = 2\pi x$$

4) Find $\frac{dy}{dx}$ if $y = \pi x^2$

Solu:

$$\frac{dy}{dx} = 2\pi x$$

5 If $\cos 3x \cos 2x + \sin 3x \sin 2x = \frac{1}{2}$, then find x° (such that x° is a positive acute angle)

Solu:

$$\cos(3x - 2x) = \frac{1}{2}$$

$$\cos x = \frac{1}{2}$$

$$x = 60$$

The second group:

1) Find the number of terms of the arithmetic sequence (1, 3, 5,, 133)

Solu: $a + (n-1)d = 133$ $a = 1$
 $1 + 2n - 2 = 133$ $d = 2$
 $2n = 134$ $L = 133$
 $n = \frac{134}{2} = 67$

2) Show that the sequence $(T_n) = 4n + 3$ is an arithmetic sequence, then find its twelfth term.

Solu: $T_1 = 7$ $(7, 11, 15, 19, \dots)$ A.S
 $T_2 = 11$
 $T_3 = 15$
 $T_4 = 19$
 $T_{n+1} - T_n = d = 4$

3) Find $\frac{dy}{dx}$ if $y = x^{\frac{3}{4}}$

Solu:

4) Find $\frac{dy}{dx}$ if $y = 2\pi x$

Solu:

$$\frac{dy}{dx} = 2\pi$$

5 If $\cos 3x \cos 2x - \sin 3x \sin 2x = \frac{1}{2}$, then find x° (such that x° is a positive acute angle)

Solu:

$$\cos(3x + 2x) = \frac{1}{2}$$

$$\cos 5x = \frac{1}{2}$$

$$5x = 60$$

$$x = 12^\circ$$

$$5x = 300$$

$$x = 60$$

The third group:

1) Find the number of terms of the arithmetic sequence (5, 10, 15,, 155)

Solu:

$$a + (n-1)d = 155$$

$$a = 5$$

$$5 + (n-1)10 = 155$$

$$d = 10$$

$$10n = 160$$

$$L = 155$$

$$n = \frac{160}{10} = 16$$

2) Show that the sequence $(T_n) = 7n + 1$ is an arithmetic sequence, then find its seventh term.

Solu:

$$T_{n+1} - T_n = 7(n+1) + 1 - [7n + 1]$$

$$7n + 7 + 1 - 7n - 1 = 7 = d$$

$$T_7 = 49 + 1 = 50$$

3) Find $\frac{dy}{dx}$ if $y = x^{\frac{4}{3}}$

Solu:

$$T_7 = 49 + 1 = 50$$

3) Find $\frac{dy}{dx}$ if $y = x^{\frac{4}{3}}$

Solu:

$$\frac{dy}{dx} = \frac{4}{3} x^{\frac{1}{3}}$$

4) Find $\frac{dy}{dx}$ if $y = 6x^2$

Solu:

$$\frac{dy}{dx} = 12x$$

5 If $\cos 5x \cos 4x - \sin 5x \sin 4x = 1$, then find x° (such that x° is a positive acute angle)

Solu:

4) Find $\frac{dy}{dx}$ if $y = 6x^2$

Solu:

$$\frac{dy}{dx} = 12x$$

5 If $\cos 5x \cos 4x - \sin 5x \sin 4x = 1$, then find x° (such that x° is a positive acute angle)

Solu:

$$\cos(5x + 4x) = 1$$

$$9x = 0$$

$$9x = 360$$

$$x = \frac{360}{9} = 40$$



④ الرياضيات البحتة لغات - للصف الثاني الثانوي علمي الأداء المنزلي الأسبوع الرابع ④

Exercises on the Arithmetic Series

1) Find the number of terms of the arithmetic sequence (3 , 6 , 9 ,99)

Solu:

$$T_n = a + (n-1)d = 99$$

$$a = 3$$

$$3 + 3n - 3 = 99$$

$$d = 3$$

$$L = 99$$

$$n = 33$$

2) Find the order and the value of the first negative term in the arithmetic sequence (60, 55, 50,)

Solu:

$$n = 35$$

2) Find the order and the value of the first negative term in the arithmetic sequence (60, 55, 50,)

Solu:

$$T_n < 0$$

$$a = 60$$

$$a + (n-1)d < 0$$

$$d = -5$$

$$60 - 5n + 5 < 0$$

$$65 < 5n$$

$$13 < n$$

$$n = 14$$

3) Find the order and the value of the first term whose value is greater than 100 in the arithmetic sequence (3, 7, 11,)

Solu:

$$a + (n-1)d < 0$$

$$60 - 5n + 5 < 0$$

$$65 < 5n$$

$$13 < n$$

$$d = -5$$

$$T_{14} = a + 13d$$

$$60 + 13(-5)$$

$$60 - 65 = -5$$

$$n = 14$$

3) Find the order and the value of the first term whose value is greater than 100 in the arithmetic sequence (3, 7, 11,)

Solu:

4) Show that the sequence $(T_n) = 4n + 3$ is an arithmetic sequence, then find its seventh term.

Solu:

3) Find the order and the value of the first term whose value is greater than 100 in the arithmetic sequence (3, 7, 11,)

Solu:

$$T_n > 100$$

$$a + (n-1)d > 100$$

$$3 + 4n - 4 > 100$$

$$4n > 101$$

$$n > 25.25$$

$$n = 26$$

$$T_{26} = a + 25d$$

$$3 + 100$$

$$103$$

4) Show that the sequence $(T_n) = 4n + 3$ is an arithmetic sequence, then find its seventh term.

Solu:

Find the order and the value of the first term whose value is greater than 100 in the arithmetic sequence (3, 7, 11,)

↗

$$T_n > 100$$

$$a + (n-1)d > 100$$

$$3 + 4n - 4 > 100$$

$$4n > 101$$

$$n > 25.25$$

$$n = 26$$

$$T_{26} = a + 25d$$

$$3 + 100$$

$$103$$

↖

Show that the sequence $(T_n) = 4n + 3$ is an arithmetic sequence, then find its seventh term.

$$T_{n+1} - T_n = 4(n+1) + 3 - [4n + 3]$$

$$4n + 4 + 3 - 4n - 3$$

$$T_7 = 28 + 3$$

$$31$$

(4)

5) S
whos
Solu:

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6) Fi

a) y
Solu:



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5) Show that the sequence $(T_n) = 5-n$ is an arithmetic sequence, then find the order of the term whose value is -11

Solu:

$$\begin{aligned} T_{n+1} - T_n &= 5 - (n+1) - [5 - n] \\ &= 5 - n - 1 - 5 + n = -1 \end{aligned}$$
$$\begin{aligned} -11 &= 5 - n \\ n &= 16 \end{aligned}$$

Exercises on Rules of Derivative

6) Find $\frac{dy}{dx}$ in each of the following:

a) $y = x^7$

b) $y = x^{\frac{3}{4}}$

c) $y = 2\pi$

Solu:

whose value is -11

Solu:

$$T_{n+1} - T_n = 5 - (n+1) - [5 - n]$$
$$5 - n - 1 - 5 + n = -1$$
$$-11 = 5 - n$$
$$n = 16$$

$$T_{16} = -11$$

Exercises on Rules of Derivative

6) Find $\frac{dy}{dx}$ in each of the following:

a) $y = x^7$

b) $y = x^{\frac{3}{4}}$

c) $y = 2\pi$

Solu:

dy

7) Find $\frac{dy}{dx}$ in each of the following:

a) $y = \sqrt{x^3}$

b) $y = \frac{5}{x^7}$

c) $y = \pi^3$

Solu:

whose value is -11

Solu:

$$\begin{aligned} T_{n+1} - T_n &= 5 - (n+1) - [5 - n] \\ 5 - n - 1 - 5 + n &= -1 \\ -1 &= 5 - n \\ n &= 16 \end{aligned}$$

$$T_{16} = -11$$

Exercises on Rules of Derivative

6) Find $\frac{dy}{dx}$ in each of the following:

a) $y = x^7$

$$\frac{dy}{dx} = 7x^6$$

b) $y = x^{\frac{3}{4}}$

$$\frac{dy}{dx} = \frac{3}{4} x^{-\frac{1}{4}}$$

c) $y = 2\pi$

$$\frac{dy}{dx} = 0$$

7) Find $\frac{dy}{dx}$ in each of the following:

a) $y = \sqrt{x^3}$

b) $y = \frac{5}{x^7}$

c) $y = \pi^3$

Solu:

$$\frac{dy}{dx} = 12x$$

$$\frac{dy}{dx} = 4x$$

$$\frac{dy}{dx} = 12x$$

7) Find $\frac{dy}{dx}$ in each of the following:

a) $y = \sqrt{x^3} = x^{3/2}$

Solu:

$$\frac{dy}{dx} = \frac{3}{2} x^{1/2}$$

b) $y = \frac{5}{x^7} = 5x^{-7}$

$$\frac{dy}{dx} = -35x^{-8}$$

c) $y = \pi^3$

$$\frac{dy}{dx} = 0$$

8) Find $\frac{dy}{dx}$ in each of the following:

a) $y = 5x^4$

b) $y = 4\pi x^2$

Solu:

7) Find $\frac{dy}{dx}$ in each of the following:

a) $y = \sqrt{x^3} = x^{3/2}$

Solu:

$$\frac{dy}{dx} = \frac{3}{2} x^{1/2}$$

b) $y = \frac{5}{x^7} = 5x^{-7}$

$$\frac{dy}{dx} = -35x^{-8}$$

c) $y = \pi^3$

$$\frac{dy}{dx} = 0$$

8) Find $\frac{dy}{dx}$ in each of the following:

a) $y = 5x^4$

Solu:

$$\frac{dy}{dx} = 20x^3$$

b) $y = 4\pi x^2$

$$\frac{dy}{dx} = 8\pi$$

7) Find $\frac{dy}{dx}$ in each of the following:

a) $y = \sqrt{x^3} = x^{3/2}$

Solu:

$$\frac{dy}{dx} = \frac{3}{2} x^{\frac{3}{2}-1} = \frac{3}{2} x^{1/2}$$

b) $y = \frac{5}{x^7} = 5x^{-7}$

$$\frac{dy}{dx} = -35x^{-8} = -35x^{-8}$$

c) $y = \pi^3$

$$\frac{dy}{dx} = 0$$

8) Find $\frac{dy}{dx}$ in each of the following:

a) $y = 5x^4$

Solu:

$$\frac{dy}{dx} = 20x^3$$

b) $y = 4\pi x^2$

$$\frac{dy}{dx} = 8\pi x$$



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Exercises on Trig. fun. of sum of 2 angles

9) If A, B are two acute angles where $\tan A = \frac{1}{2}$, $\tan B = \frac{1}{3}$, then find $\tan (A + B)$

Solu:

$$\tan(A+B) = \frac{\tan A + \tan B}{1 - \tan A \tan B} = \frac{\frac{1}{2} + \frac{1}{3}}{1 - \frac{1}{2} \times \frac{1}{3}} = \frac{\frac{5}{6}}{\frac{5}{6}} = 1$$

10) If $\sin x \cos 4x + \cos x \sin 4x = \frac{1}{2}$, then find x° (such that x° is a positive acute angle)

Solu:

$$1 - \tan^2 \beta$$

$$1 - \frac{1}{2} \times \frac{1}{3}$$

10) If $\sin x \cos 4x + \cos x \sin 4x = \frac{1}{2}$, then find x° (such that x° is a positive acute angle)

Solu:

$$\sin(x + 4x) = \frac{1}{2}$$

$$\sin 5x = \frac{1}{2}$$

$$5x = 30$$

$$x = 6^\circ$$

$$5x = 150$$

$$x = 30^\circ$$



⑤ الرياضيات البحتة لغات . للصف الثاني الثانوي علمي التقييمات الأسبوعية الأسبوع الخامس ⑤

The first group:

- 1) An arithmetic sequence its third term = 7 and its fourth term = 10.

Find the sequence, then find its ninth term.

Solu: $a + 2d = 7$ (1)
 $a + 3d = 10$ (2)
 $\underline{a + 3d = 10}$
 $d = 3$ in (1)
 $a = 1$

A.S. = $(1, 4, 7, \dots)$
 $T_9 = a + 8d$
 $= 1 + 8 \times 3 = 25$

- 2) Insert 20 arithmetic means between 17 and 80.

Solu:

$$d = 3 \text{ in } (1) \quad \dots \dots \dots = 1 + 8 \times 3 = 25$$

$$a = 1$$

2) Insert 20 arithmetic means between 17 and 80.

Solu:

$$(17, \dots, \overset{20m}{\dots}, 80)$$

$$a = 17$$

$$A_{200} (2n, 23, 26, \dots)$$

$$a + 21d = 80$$

$$21d = 80 - 17 = 63$$

$$d = 3$$

3) If $y = 7x^3 + 6x^2 - 4$, Find $\frac{dy}{dx}$

Solu:

4) If $y = (4x^2 - 3x)(x^2 + 6)$, Find $\frac{dy}{dx}$

Solu:

Solu:

$$\frac{dy}{dx} = 21x^2 + 12x$$

4) If $y = (4x^2 - 3x)(x^2 + 6)$, Find $\frac{dy}{dx}$

Solu:

$$\frac{dy}{dx} = (8x - 3)(x^2 + 6) + 2x(4x^2 - 3x)$$

5) If $\sin A = \frac{3}{5}$ (such that A is an acute angles), then find $\cos(A + 30^\circ)$

Solu:

Solu: $\frac{dy}{dx} = 21x^2 + 12x$

4) If $y = (4x^2 - 3x)(x^2 + 6)$, Find $\frac{dy}{dx}$

Solu: $\frac{dy}{dx} = (8x - 3)(x^2 + 6) + 2x(4x^2 - 3x)$

5) If Sin A = $\frac{3}{5}$ (such that A is an acute angles), then find Cos (A+30°)

Solu: $\cos(A+30) = \cos A \cos 30 - \sin A \sin 30$

$$\frac{4}{5} \times \frac{\sqrt{3}}{2} - \frac{3}{5} \times \frac{1}{2}$$

$$\frac{4\sqrt{3}}{10} - \frac{3}{10} = \frac{4\sqrt{3}-3}{10}$$

(5)

Solu: $a + 2d = 8 \quad (1)$ $A.S (2, 5, 8, \dots)$
 $a + 3d = 11 \quad (2)$
 $\underline{a + 3d = 11 \quad (2)}$
 $d = 3$
 $a = 2$
 $T_n = a + (n-1)d$
 $= 2 + 8 \times 3$
 $= 26$

2) Insert 20 arithmetic means between 18 and 81.

Solu: $\dots$

3) If $y = 8x^4 + 7x^3 - 5$, Find $\frac{dy}{dx}$

Solu: $\dots$

4) If $y = (x^3 - x)(2x + 3)$, Find $\frac{dy}{dx}$

Solu: $a + 2d = 8$ (1) A.S (2, 5, 8, ...)

$a + 3d = 11$ (2)

$d = 3$

$a = 2$

$T_n = a + (n-1)d$

$= 2 + 8 \times 3$

$= 26$

2) Insert 20 arithmetic means between 18 and 81.

Solu: (18, ..., ..., 81)

$a = 18$ $d = 3$ A.M (21, 24, 27, ...)

$a + 21d = 81$

$21d = 81 - 18$

$21d = 63$

3) If $y = 8x^4 + 7x^3 - 5$, Find $\frac{dy}{dx}$

Solu:

4) If $y = (x^3 - x)(2x + 3)$, Find $\frac{dy}{dx}$

21d = 63

3) If $y = 8x^4 + 7x^3 - 5$, Find $\frac{dy}{dx}$

Solu: $\frac{dy}{dx} = 32x^3 + 21x^2$

4) If $y = (x^3 - x)(2x + 3)$, Find $\frac{dy}{dx}$

Solu: $\frac{dy}{dx} = (3x^2 - 1)(2x + 3) + 2(x^3 - x)$

5) If $\sin A = \frac{3}{5}$ (such that A is an acute angles), then find $\cos(A + 45^\circ)$

Solu:

4) If $y = (x^3 - x)(2x + 3)$, Find $\frac{dy}{dx}$

Solu: $\frac{dy}{dx} = (3x^2 - 1)(2x + 3) + 2(x^3 - x)$

5) If $\sin A = \frac{3}{5}$ (such that A is an acute angles), then find $\cos(A + 45^\circ)$

Solu: $\cos(A + 45^\circ) = \cos A \cos 45^\circ - \sin A \sin 45^\circ$

$$\frac{4}{5} \times \frac{\sqrt{2}}{2} - \frac{3}{5} \times \frac{\sqrt{2}}{2}$$

$$\frac{4\sqrt{2}}{10} - \frac{3\sqrt{2}}{10} = \frac{\sqrt{2}}{10}$$



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The third group:

- 1) 1) An arithmetic sequence its third term = 9 and its fourth term = 12.
Find the sequence, then find its ninth term.

Solu: $a + 2d = 9$ (1)
 $a + 3d = 12$ (2)
 $\underline{a + 3d = 12}$
 $a = 3$
 $a = 3$

A.S = (3, 6, 9, ...)
 $T_9 = a + 8d$
 $3 + 24$
 27

- 2) Insert 20 arithmetic means between 20 and 83.

Solu: _____

- 3) If $y = 9x^5 + 5x^3 - 2$, Find $\frac{dy}{dx}$

2) Insert 20 arithmetic means between 20 and 83.

Solu: $(20, \dots, 83)$

$a = 20$

$a + 21d = 83$

$20 + 21d = 83$

$21d = 83 - 20 = 63$

$d = 3$

$A = (23, 26, 29, \dots)$

3) If $y = 9x^5 + 5x^3 - 2$, Find $\frac{dy}{dx}$

Solu:

4) If $y = (x^4 - 2x)(4x + 6)$, Find $\frac{dy}{dx}$

Solu:

$$a = 20$$

$$a + 21d = 83$$

$$20 + 21d = 83$$

$$21d = 83 - 20 = 63$$

$$d = 3$$

$$A_n = (20, 23, 26, \dots)$$

3) If $y = 9x^5 + 5x^3 - 2$, Find $\frac{dy}{dx}$

Solu: $\frac{dy}{dx} = 45x^4 + 15x^2$

4) If $y = (x^4 - 2x)(4x + 6)$, Find $\frac{dy}{dx}$

Solu: $\frac{dy}{dx} = (4x^3 - 2)(4x + 6) + 4(x^4 - 2x)$

5) If $\sin A = \frac{3}{5}$ (such that A is an acute angles), then find $\cos(A + 60^\circ)$

Solu:

4) If $y = (x^4 - 2x)(4x + 6)$, Find $\frac{dy}{dx}$

Solu: $\frac{dy}{dx} = (4x^3 - 2)(4x + 6) + 4(x^4 - 2x)$

5) If $\sin A = \frac{3}{5}$ (such that A is an acute angles), then find $\cos(A + 60^\circ)$

Solu: $\cos A \cos 60 - \sin A \sin 60$
 $\frac{4}{5} \times \frac{1}{2} - \frac{3}{5} \times \frac{\sqrt{3}}{2}$
 $\frac{4}{10} - \frac{3\sqrt{3}}{10} = \frac{4 - 3\sqrt{3}}{10}$

5 الرياضيات البحتة لغات - للصف الثاني الثانوي علمي الأداء المنزلي الأسبوع الخامس

First: Algebra- the sequences and Series:

- 1) An arithmetic sequence its first term equals 7 and its seventh term equals 19. Find the sequence, then find its fourth term.

Solu:

$$\begin{aligned} a &= 7 & a_5 &= (7, 9, 11, \dots) \\ a + 6d &= 19 & T_4 &= a + 3d \\ 6d &= 12 & 7 + 6 & \\ d &= 2 & & 13 \end{aligned}$$

- 2) Insert 20 arithmetic means between 15 and 78.

Solu:

- 3) If x ,6, 11, y are four consecutive terms in an arithmetic sequence, then find x and y.

Solu:

- 4) An arithmetic sequence its sixth term equals 13 and its common difference equals 2

2) Insert 20 arithmetic means between 15 and 78.

Solu: (15, ———, 78)

$$a = 15$$

$$a + 21d = 78$$

$$21 \times \frac{78 - 15}{20} = 63$$

$$d = 3$$

Arms (18, 21, 24, ...)

3) If x, 6, 11, y are four consecutive terms in an arithmetic sequence, then find x and y.

Solu:

4) An arithmetic sequence its sixth term equals 13 and its common difference equals 2, then find the sequence.

Solu:

3) If $x, 0, 11, y$ are four consecutive terms in an arithmetic sequence, then find x and y .

Solu: $d = 11 - 0 = 11$

$$y = 0 + 11 = 11$$

$$x = 11 - 11 = 0$$

4) An arithmetic sequence its sixth term equals 13 and its common difference equals 2, then find the sequence.

Solu: $T_6 = a + 5d = 13$

$$d = 2$$

$$a + 10 = 13$$

$$a = 3$$

$$A.S. \quad (3, 5, 7, \dots)$$

5) If we insert 10 arithmetic means between 2 and -20, then find the fourth mean.

Solu:

4) An arithmetic sequence its sixth term equals 13 and its common difference equals 2, then find the sequence.

Solu:

$$T_6 = a + 5d = 13 \quad d = 2$$

$$a + 10 = 13$$

$$a = 3$$

$$A.S. \quad (3, 5, 7, \dots)$$

5) If we insert 10 arithmetic means between 2 and -20, then find the fourth mean.

Solu:

$$(2,$$

$$, -20)$$

$$a = 2$$

$$a + 11d = -20$$

$$11d = -22$$

$$d = -2$$

$$T_5 = a + 4d$$

$$= 2 + 4(-2)$$

$$= 2 - 8$$

$$= -6$$

Solu:

$$\frac{dy}{dx} = 32x^3 + 6x^2$$

7) If $y = 3x^5(4x - 7)$, Find $\frac{dy}{dx}$

Solu:

$$y = 12x^6 - 21x^5$$

$$\frac{dy}{dx} = 72x^5 - 105x^4$$

8) If $y = (4x^2 - 3x)(x^2 + 6)$, Find $\frac{dy}{dx}$

Solu:

Third: Trigonometry-Unit four

9) ABC is a triangle in which $\tan A = \frac{1}{2}$ and $\tan B = \frac{1}{3}$, find without using calculator $m(\angle C)$.

Solu:

7) If $y = 3x^2(4x - 7)$, Find $\frac{dy}{dx}$

Solu:

$$y = 12x^3 - 21x^2$$

$$\frac{dy}{dx} = 36x^2 - 42x$$

8) If $y = (4x^2 - 3x)(x^2 + 6)$, Find $\frac{dy}{dx}$

Solu:

$$\frac{dy}{dx} = (8x - 3)(x^2 + 6) + (2x)(4x^2 - 3x)$$

Third: Trigonometry-Unit four

9) ABC is a triangle in which $\tan A = \frac{1}{2}$ and $\tan B = \frac{1}{3}$, find without using calculator $m(\angle C)$.

Solu:

Trigonometry-Unit four

In a triangle in which $\tan A = \frac{1}{2}$ and $\tan B = \frac{1}{3}$, find without using calculator $m(\angle C)$.

$$A + B + C = 180^\circ$$

$$A + B = 180^\circ - C$$

$$\tan(A+B) = -\tan C$$

$$\tan(A+B) = \frac{\frac{1}{2} + \frac{1}{3}}{1 - \frac{1}{2} \times \frac{1}{3}} = \frac{\frac{5}{6}}{1 - \frac{1}{6}} = 1 = -\tan C$$

$$\tan C = -1 \quad \angle C = 135^\circ$$

If $\sin A = \frac{3}{5}$ (such that A is an acute angle), then find $\sin(A+30^\circ)$

$$\sin(A+30^\circ)$$

$$\sin A \cos 30^\circ + \sin 30^\circ \cos A$$

$$\frac{4}{5} \times \frac{\sqrt{3}}{2} + \frac{1}{2} \times \frac{3}{5}$$

$$\frac{4\sqrt{3}}{10} + \frac{3}{10} = \frac{4\sqrt{3}+3}{10}$$

(4)



وزارة التربية والتعليم و التعليم الفني
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⑤ الرياضيات البحتة لغات - للصف الثاني الثانوي علمي الأداء الصف الخامس الأسبوع الخامس

First: Algebra- the sequences and Series:

1) An arithmetic sequence its second term equals 8 and its ninth term equals – 13. Find the sequence, then find its seventh term.

Solu:

$$\begin{aligned} T_2 &= a + d = 8 \quad (1) \\ a + 8d &= -13 \quad (2) \\ 7d &= -21 \\ d &= -3 \\ a &= 11 \end{aligned}$$

$$A.S (11, 8, 5, \dots)$$

2) Insert 20 arithmetic means between 14 and 77.

Solu:

3) If x ,7, 10, y are four consecutive terms in an arithmetic sequence, then find x and y.

Solu:



⑤ الرياضيات البحتة لغات - للصف الثاني الثانوي علمي الأداء الصفي الأسبوع الخامس

First: Algebra- the sequences and Series:

1) An arithmetic sequence its second term equals 8 and its ninth term equals – 13. Find the sequence, then find its seventh term.

Solu: $T_2 = a + d = 8 \text{ (1)}$ $A.S. (11, 8, 5, \dots)$
 $a + 8d = -13 \text{ (2)}$
 $7d = -21$
 $d = -3$
 $a = 11$

2) Insert 20 arithmetic means between 14 and 77.

Solu: $(14, \dots, 77)$
 $a = 14$
 $a + 21d = 77$ $A.M.s (17, 20, 23, \dots)$
 $21d = 63$ $d = 3$

3) If x ,7, 10, y are four consecutive terms in an arithmetic sequence, then find x and y.

Solu: $x = 4$ $y = 13$

2) Insert 20 arithmetic means between 14 and 77.

Solu:

$$(14, \dots, 77)$$

$$a = 14$$

$$a + 21d = 77$$

$$21d = 63 \quad d = 3$$

Arms (17, 20, 23, ...)

3) If $x, 7, 10, y$ are four consecutive terms in an arithmetic sequence, then find x and y .

Solu:

$$d = 10 - 7 = 3$$

$$y = 10 + 3 = 13$$

$$x = 7 - 3 = 4$$

4) An arithmetic sequence its second term equals 11 and its eleventh term equals 8, then find its eighth term.

Solu:

4) An arithmetic sequence its second term equals 11 and its eleventh term equals 8, then find its eighth term.

Solu:

$$a + d = 11 \quad (1)$$

$$a + 10d = 8 \quad (2)$$

$$9d = -3$$

$$d = -\frac{1}{3} \text{ in (1)}$$

$$a = 11\frac{1}{3}$$

$$T_8 = a + 7d = 11\frac{1}{3} + 7 \times -\frac{1}{3} = \dots$$

5) If we insert 10 arithmetic means between 2 and -20, then find the fourth mean.

Solu:

$$(2, \dots, \dots, \dots, -20)$$

$$a = 2$$

$$a + 11d = -20$$

$$11d = -22$$

$$d = -2$$

$$T_5 = a + 4d$$

$$= 2 + 4 \times -2$$

$$= 2 - 8$$
$$= -6$$

$$\frac{dy}{dx} = 15x^4 + 4$$

7) If $y = 2x^4(8x + 3)$, Find $\frac{dy}{dx}$

Solu:

$$y = 16x^5 + 6x^4$$

$$\frac{dy}{dx} = 80x^4 + 24x^3$$

8) If $y = (5x^3 - x)(2x^2 - 1)$, Find $\frac{dy}{dx}$

Solu:

$$\frac{dy}{dx} = (15x^2 - 1)(2x^2 - 1) + 4x(5x^3 - x)$$

Third: Trigonometry-Unit four

9) ABC is a triangle in which $\tan A = \frac{3}{4}$ and $\tan B = \frac{1}{7}$, find without using calculator $m(\angle C)$.

Solu:

Third: Trigonometry-Unit four

9) ABC is a triangle in which $\tan A = \frac{3}{4}$ and $\tan B = \frac{1}{7}$, find without using calculator $m(\angle C)$.

Solu:

$$A + B + C = 180$$

$$A + B = 180 - C$$

$$\tan(A+B) = -\tan C$$

$$\frac{\frac{3}{4} + \frac{1}{7}}{1 - \frac{3}{4} \times \frac{1}{7}} = -\tan C$$

$$\tan C = \frac{\frac{3}{4} + \frac{1}{7}}{\frac{3}{4} - 1}$$

$$\angle C = \dots$$



10) If $\sin A = \frac{3}{5}$, $\cos B = \frac{5}{13}$ (such that A and B are two acute angles), then find $\sin(A+B)$ and $\cos(A-B)$

Solu:

$$\sin(A+B) = \sin A \cos B + \sin B \cos A = \frac{3}{5} \times \frac{5}{13} + \frac{4}{5} \times \frac{12}{13} = \dots$$

$$\cos(A-B) = \cos A \cos B + \sin A \sin B = \frac{4}{5} \times \frac{5}{13} + \frac{3}{5} \times \frac{12}{13} = \dots$$

1) Find the sum of the first 20 terms of the arithmetic sequence (1, 3, 5,)

Solu: $a = 1, d = 3$ $S_{20} = \frac{20}{2} [2 \times 1 + 19 \times 3]$
 $10 [2 + 57] = 600$

2) In the arithmetic sequence (100, 90, 80,), find the sum of 10 terms starting from its T_7

Solu: $T_7 = a + 6d = 100 + 6 \times -10 = 40$
 $S_n = \frac{10}{2} [2 \times 40 + 9 \times -10]$
 $5 [80 - 90]$
 $5 \times -10 = -50$

3) Find the sum of terms of the sequence (3, 6, 9, 99)

Solu:

$$S_n = \frac{10}{2} [2 \times 40 + 9 \times -10]$$

$$5 [80 - 90]$$

$$5 \times -10 = -50$$

3) Find the sum of terms of the sequence (3, 6, 9,99)

Solu:

$$99 = 3 + (n-1) \times 3$$

$$99 = 3 + 3n - 3$$

$$n = 33$$

$$S_{33} = \frac{33}{2} [3 + 99]$$

$$\frac{33}{2} \times 102 = \dots$$

4) If $y = \frac{x+1}{x+2}$, Find $\frac{dy}{dx}$

Solu:

5) If $y = (x^2 - 5x + 1)^3$, Find $\frac{dy}{dx}$

Solu:

$$\begin{aligned} 99 &= 3 + (n-1) \cdot 3 \\ 99 &= 3 + 3n - 3 \\ n &= 33 \end{aligned}$$

$$233 = \frac{n}{2} (3 + 99)$$

$$\frac{33}{2} \times 102 = \dots$$

4) If $y = \frac{x+1}{x+2}$, Find $\frac{dy}{dx}$

Solu: $\frac{dy}{dx} = \frac{x+2 - x-1}{(x+2)^2} = \frac{1}{(x+2)^2}$

5) If $y = (x^2 - 5x + 1)^3$, Find $\frac{dy}{dx}$

Solu: $\frac{dy}{dx} = 3(x^2 - 5x + 1)^2 \cdot (2x - 5)$



The second group:

- 1) Find the sum of the first 20 terms of the arithmetic sequence (2,4,6,.....)

Solu: $S_{20} = \frac{20}{2} [2 \times 2 + 19 \times 2]$
 $= 10 [4 + 38]$
 $= 10 \times 42$
 $= 420$

- 2) In the arithmetic sequence (50, 45, 40,), find the sum of 10 terms starting from its T_5

Solu:

$$10 [4 + 38]$$

$$10 \times 42$$

$$420$$

2) In the arithmetic sequence (50, 45, 40,), find the sum of 10 terms starting from its T_5

Solu:

$$T_5 = a + 4d = 50 + 4 \times -5 = 50 - 20 = \underline{30}$$

$$S_{10} = \frac{10}{2} [2 \times 30 + 9 \times -5]$$

$$5 [60 - 45]$$

$$5 \times 15$$

$$75$$

3) Find the sum of terms of the sequence (6, 12, 18,96)

Solu:

$$\begin{aligned} \text{lu: } 96 &= 6 + (n-1)6 \\ 96 &= 6n \\ n &= 16 \end{aligned}$$

$$\begin{aligned} S_{16} &= \frac{16}{2} [6 + 96] \\ &= 8 \times 102 \\ &= 816 \end{aligned}$$

4) If $y = \frac{x+2}{x+3}$, Find $\frac{dy}{dx}$

$$\text{lu: } \frac{dy}{dx} = \frac{(x+3) - (x+2)}{(x+3)^2} = \frac{1}{(x+3)^2}$$

5) If $y = (x^2 - 4x + 1)^5$, Find $\frac{dy}{dx}$

$$\text{lu: } \frac{dy}{dx} = 5(x^2 - 4x + 1)^4 (2x - 4)$$



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The third group:

1) Find the sum of the first 20 terms of the arithmetic sequence (7,9,11,.....)

Solu: $S_{20} = \frac{20}{2} [2 \times 7 + 19 \times 2]$
 $10 [14 + 38]$
 10×52
 520

2) In the arithmetic sequence (33, 30, 27,), find the sum of 10 terms starting from its T_9

Solu:

Solu:

$$19 = a + 8d = 22 + 8x - 2$$

$$33 - 24 = 9$$

$$S_{10} = \frac{10}{2} [2 \times 9 + 9 \times -2]$$

$$5 [18 - 18]$$

$$5 \times -9 = -45$$

3) Find the sum of terms of the sequence (4, 8, 12, , 104)

Solu:

$$104 = 4 + (n-1)4$$

$$104 = 4n$$

$$n = 26$$

$$S_{26} = \frac{26}{2} [4 + 104]$$

$$13 \times 108 = -$$

4) If $y = \frac{x+5}{x+6}$, Find $\frac{dy}{dx}$

Solu:

5) If $y = (x^2 - 7x + 1)^8$, Find $\frac{dy}{dx}$

$n=26$

4) If $y = \frac{x+5}{x+6}$, Find $\frac{dy}{dx}$

Solu: $\frac{dy}{dx} = \frac{x+6-x-5}{(x+6)^2} = \frac{1}{(x+6)^2}$

5) If $y = (x^2 - 7x + 1)^8$, Find $\frac{dy}{dx}$

Solu: $\frac{dy}{dx} = 8(x^2 - 7x + 1)^7 (2x - 7)$

⑥ الرياضيات البحتة لغات - للصف الثاني الثانوي علمي الأداء المنزلي الأسبوع السادس

First: Exercises on arithmetic series:

1) Find the sum of the first 30 terms of the arithmetic sequence (5,8,11,.....)

$$\text{Solu: } S_{30} = \frac{30}{2} [2 \times 5 + 29 \times 3]$$

$$15 [10 + 87]$$

$$15 \times 97$$

2) In the arithmetic sequence (90, 85, 80,), find the sum of 20 terms starting from its T_{10}

Solu:

3) Find the sum of terms of the sequence (8, 12, 16,88)

Solu:

2) In the arithmetic sequence (90, 85, 80,), find the sum of 20 terms starting from its T_{10}

Solu:

$$T_{10} = 90 + 9 \times -5 = 90 - 45 = 45$$

$$S_{20} = \frac{20}{2} [2 \times 45 + 19 \times -5] = \dots$$

3) Find the sum of terms of the sequence (8, 12, 16,88)

Solu:

$$88 = 8 + (n-1) \times 4$$

$$88 = 8 + 4n - 4$$

$$88 = 4n + 4$$

$$84 = 4n$$

$$n = 21$$

$$S_{21} = \frac{21}{2} [8 + 88] = \dots$$

4) An arithmetic sequence its middle term is $T_{15} = 30$, find the sum of this sequence.

Solu:

5) In the arithmetic sequence $(T_n) = (50, 45, 40, \dots)$, find the greatest number of its terms could be taken starting from its first term to get the maximum sum.

Solu:

4) An arithmetic sequence its middle term is $T_{15} = 30$, find the sum of this sequence.

Solu:

$$a + 14d = 30$$

$$S_{29} = \frac{n}{2} [2a + (n-1)d]$$

$$= \frac{29}{2} [2a + 28d]$$

$$29 [a + 14d]$$

$$= 29 \times 30 = \dots$$

5) In the arithmetic sequence $(T_n) = (50, 45, 40, \dots)$, find the greatest number of its terms could be taken starting from its first term to get the maximum sum.

Solu:

$$S_n > 0 \quad \frac{n}{2} [2a + (n-1)d] > 0$$

$$\div n/2$$

$$100 + (n-1) \times -5 > 0$$

$$100 - 5n + 5 > 0$$

$$105 > 5n$$

$$21 > n$$

$$n = 21$$

6) An arithmetic sequence its first term equals 5, its last term equals 105 and its sum equals 1155, find this sequence.

Solu:

$$a = 5 \quad L = 105$$

$$1155 = \frac{n}{2} [5 + 105]$$

$$1155 = 55n$$

$$n = \frac{1155}{55} = 21$$

(3)

$$T_{21} = a + 20d = 105$$

$$5 + 20d = 105$$

$$20d = 100$$

$$d = 5$$

$$A.S = (5, 10, 15, \dots)$$



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Second: Exercises on rules of derivatives

7) If $y = \frac{-1}{x+4}$, Find $\frac{dy}{dx}$

Solu:

$$y' = \frac{0+1}{(x+4)^2} = \frac{1}{(x+4)^2}$$

8) If f is a function: $f(x) = \frac{x-5}{x+7}$, then Find $f'(x)$

Solu:

Solu:

$$\frac{dx}{dx} = \frac{x+7 - x+5}{(x+7)^2} = \frac{12}{(x+7)^2}$$

9) If $y = (x^2 - 3x - 1)^7$, Find $\frac{dy}{dx}$

Solu:

$$\frac{dy}{dx} = 7(x^2 - 3x - 1)^6 (2x - 3)$$

10) If $y = z + \frac{1}{z}$ and $z = 3x + 5$, then find $\frac{dy}{dx}$ at $x = 1$

Solu:

9) If $y = (x^2 - 3x - 1)^7$, Find $\frac{dy}{dx}$

Solu: $\frac{dy}{dx} = 7(x^2 - 3x - 1)^6 (2x - 3)$

10) If $y = z + \frac{1}{z}$ and $z = 3x + 5$, then find $\frac{dy}{dx}$ at $x = 1$

Solu: $\frac{dy}{dz} = 1 - \frac{1}{z^2}$, $\frac{dz}{dx} = 3$

$\frac{dy}{dx} = 3 \left(1 - \frac{1}{(3x+5)^2} \right) = 3 \left(1 - \frac{1}{64} \right) = \dots$

⑥ الرياضيات البحتة لغات - للصف الثاني الثانوي علمي الأداء الصفی الأسبوع السادس

First: Exercises on arithmetic series:

1) Find the sum of the first 30 terms of the arithmetic sequence (4,10,16,.....)

Solu: $S_{30} = \frac{30}{2} [2 \times 4 + 28 \times 6] = \dots$

2) In the arithmetic sequence (5, 8,11, ,.....) ,find the sum of 10 terms starting from its T_7

Solu:

3) Find the sum of terms of the sequence (11, 15, 19, ,87)

Solu:

its T_7

Solu: $T_7 = a + 6d = 5 + 18 = 23$

$$S_{10} = \frac{10}{2} [2 \times 23 + 9 \times 3] = \dots$$

3) Find the sum of terms of the sequence (11, 15, 19,, 87)

Solu: $87 = 11 + (n-1)4$

$$87 = 11 + 4n - 4$$

$$80 = 4n$$

$$n = 20$$

$$S_{20} = \frac{20}{2} [11 + 87] = \dots$$

4) An arithmetic sequence its middle term is $T_{11} = 60$, find the sum of this sequence.

Solu:

5) In the arithmetic sequence $(T_n) = (55, 51, 47, \dots)$, find the greatest number of its terms could be taken starting from its first term to get the sum greater than zero.

Solu:

4) An arithmetic sequence its middle term is $T_{11} = 60$, find the sum of this sequence.

Solu:

$$T_{11} = a + 10d = 60$$

$$S_{21} = \frac{21}{2} [2a + 20d]$$

$$21 [a + 10d] = 21 \times 60 = 1260$$

5) In the arithmetic sequence $(T_n) = (55, 51, 47, \dots)$, find the greatest number of its terms could be taken starting from its first term to get the sum greater than zero.

Solu:

$$S_n > 0 \quad \frac{n}{2} [2a + (n-1)d] > 0 \quad \div n/2$$

$$[110 + (n-1) \times -4] > 0$$

$$110 - 4n + 4 > 0 \quad 114 > 4n$$

$$28.5 > n$$

$$n = 28$$

6) An arithmetic sequence its first term equals 19, its last term equals -41 and its sum equals -231, find this sequence.

Solu:

$$a = 19$$

$$L = -41$$

$$S_n = -231 = \frac{n}{2} [19 + (-41)]$$

$$-231 = -11n$$

$$n = 21$$

$$a + 20d = -41$$

$$19 + 20d = -41$$

$$20d = -60$$

$$d = -3$$

(1)

$$A.S = (19, 16, 13, \dots)$$

Second: Exercises on rules of derivatives

7) If $y = \frac{-7}{x+1}$, Find $\frac{dy}{dx}$

Solu:

$$\frac{dy}{dx} = \frac{0 \cdot (-1) - (-7) \cdot 1}{(x+1)^2} = \frac{7}{(x+1)^2}$$

8) If f is a function: $f(x) = \frac{x^2-1}{x+2}$, then Find $f'(x)$

Solu:

9) If $y = (x^2 - 4x - 6)^5$, Find $\frac{dy}{dx}$

Solu:

$$\frac{dz}{dx} = \frac{2x(x+2) - (x^2-1)}{(x+2)^2}$$

$$\frac{dy}{dx} = \frac{x^2+4x+1}{(x+2)^2}$$

9) If $y = (x^2 - 4x - 6)^5$, Find $\frac{dy}{dx}$

Solu:

$$\frac{dy}{dx} = 5(x^2 - 4x - 6)^4 (2x - 4)$$

10) If $y = \frac{z-1}{z+1}$ and $z = \frac{x+1}{x-1}$, then find $\frac{dy}{dx}$ at $x = 2$

Solu:

9) If $y = (x^2 - 4x - 6)^5$, Find $\frac{dy}{dx}$

Solu: $\frac{dy}{dx} = 5(x^2 - 4x - 6)^4 (2x - 4)$

$z = \frac{x-1}{x+1}$

10) If $y = \frac{z-1}{z+1}$ and $z = \frac{x+1}{x-1}$, then find $\frac{dy}{dx}$ at $x = 2$

Solu:

$$\frac{dy}{dz} = \frac{z+1 - z-1}{(z+1)^2} = \frac{2}{(z+1)^2}$$

$$\frac{dz}{dx} = \frac{x-1 - x-1}{(x-1)^2} = \frac{-2}{(x-1)^2}$$

$$\frac{dy}{dx} = \frac{2}{(z+1)^2} \cdot \frac{-2}{(x-1)^2} = \frac{-4}{16} = \frac{-1}{4}$$

(2)

1 الأداء الصفي - الصف الثاني الثانوي - علمى - تطبيقات الرياضيات لغات - الأسبوع الأول 1

- (1) Convert each of the following units to their corresponding units:
 - a) 20 kg.wt to Newton
 - b) 54 km/h to m/s
 - c) 1960 Newton to kg.wt
 - d) 0.5 gm.wt to Dyne
- (2) A particle moves so that the vector of its position $\vec{r}$ is given as a function of time in terms of the two fundamental unit vectors $\hat{i}, \hat{j}$ by the relation :
 $\vec{r}(t) = (6t + 1)\hat{i} + (8t - 2)\hat{j}$ find:
the norm of the displacement vector up to the moment $t = 3$
- (3) Find the distance in kilometers traveled by a car moving at a uniform speed 81 km/h for 20 minutes.
- (4) Find the hourly time taken by a car moving at a uniform speed of 20 m/s to cover a distance of 72 km .
- (5) A runner moves 30 meters East, then moves 40 meter North. Calculate the distance and the displacement cut by the runner .
- (6) A cyclist traveled 50 km on a straight road at a speed of 20 km/h and then returned on the same road. He traveled 18 km in the opposite direction at a speed of 12 km / h . Find its average velocity vector for the whole journey and then find the average speed for the whole journey.
- (7) A cyclist covered 32 km on a straight road at a speed of 16 km/h, then traveled 27 km in the same direction at a speed of 9 km/h. Find the vector of its average velocity during the entire trip, then find the average speed during the entire trip.

- (8) A particle was present at two-time moments 3 and 8 seconds at the two positions A(3, 6) and B(7, 9) respectively. Find: the average velocity vector of the particle during this time period, then find the magnitude and direction of this velocity.
- (9) If the position vector of a particle moving in a straight line from point O is given as a function of time t (second) by the relation: $\vec{r} = (t^2 + 1) \hat{c}$, find the magnitude of the displacement vector $\vec{s}$ after 3 seconds, where the magnitude of $\vec{r}$ is in meter.
- (10) Two cars moved simultaneously from Benha heading to Cairo at a constant speed for each of them. If the speed of the first car is 98 km/h, and the speed of the second car is 42 km/h, how long will the driver of the first car waits until he catches up with the driver of the second car at the end of the journey which is 49 km long?

1 الأداء المنزلي - الصف الثانى الثانوى - علمى - تطبيقات الرياضيات لغات - الأسبوع الأول 1

(1) Convert each of the following units to their corresponding units:

- a) 10 kg.wt to Newton
- b) 72 km/h to m/s
- c) 65000 Dyne to Newton
- d) 4900 Dyne to gm wt

(2) A particle moves so that the vector of its position $\vec{r}$ is given as a function of time in terms of the two fundamental unit vectors $\hat{i}, \hat{j}$ by the relation :

$$\vec{r}(t) = (4t + 2)\hat{i} + (3t - 1)\hat{j} \text{ find:}$$

Norm of the Displacement vector up to the moment $t = 4$

(3) Find the distance in kilometers traveled by a car moving at a uniform speed 56 km/h for 15 minutes.

(4) Find the hourly time taken by a car moving at a uniform speed of 40 m/s in a distance of 36 km.

(5) A runner moves 120 meters East, then moves 50 meters North. Calculate the distance and the displacement cut by the runner.

(6) A cyclist traveled 30 km on a straight road at a speed of 15 km/h and then returned on the same road He traveled 20 km in the opposite direction at a speed of 20 km / h . Find its velocity vector for the whole journey and then find the average velocity magnitude for the whole journey.

(7) A cyclist covered 42 km on a straight road at a speed of 14 km/h, then traveled 6 km in the same direction at a speed of 6 km/h. Find the vector of its average velocity during the entire trip, then find the average speed. during the entire trip.

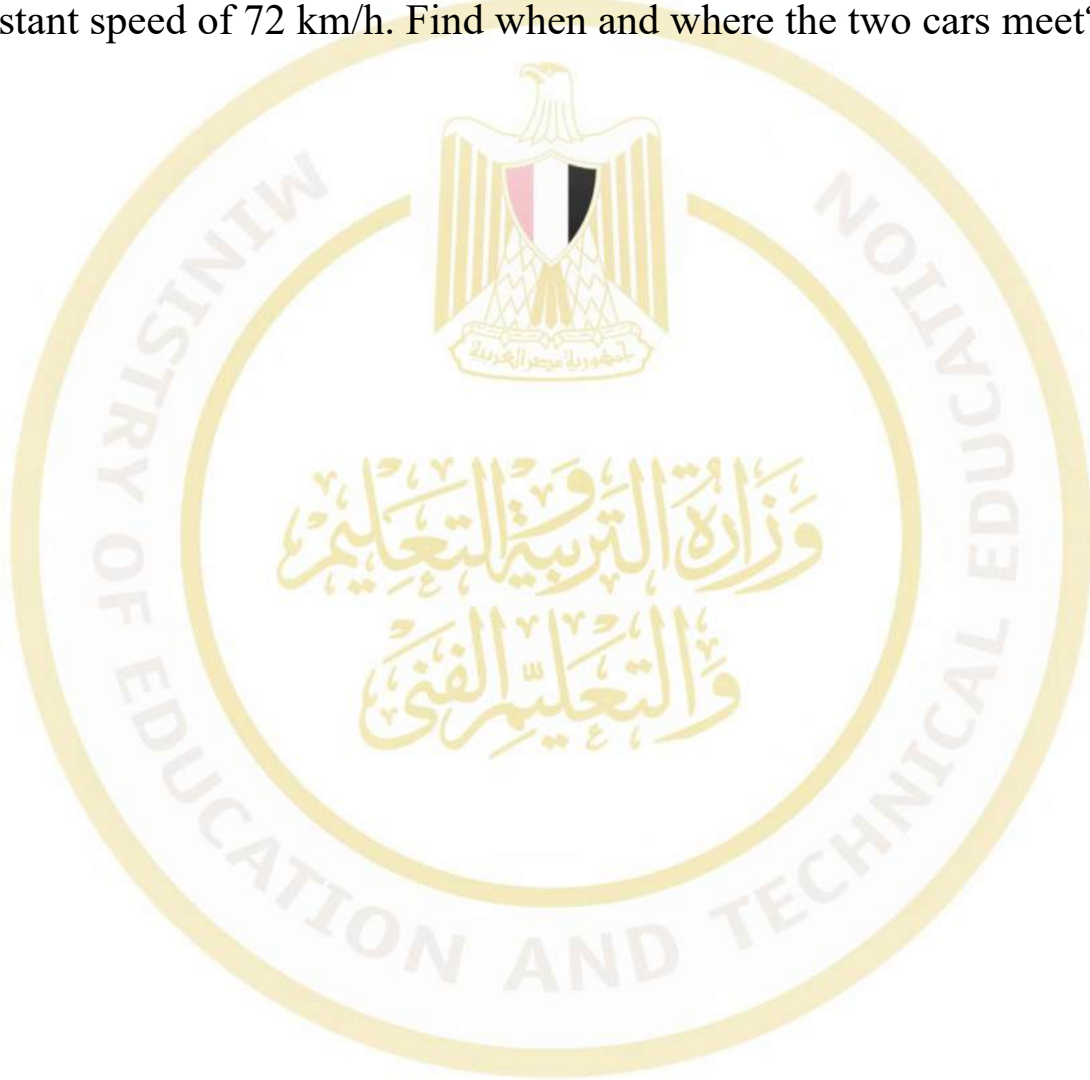
- (8) A particle was present at two-time moments 3 and 7 seconds at positions A(5, 2) and B(9, 10) respectively. Find: the average velocity vector of the particle during this time period, then find the magnitude and direction of this velocity.
- (9) If the position vector of a particle moving in a straight line from the origin point (O) is given as a function of time t (seconds) by the relation: $\vec{r} = (2t^2 + 3)\hat{c}$, find the magnitude of the displacement vector $\vec{s}$ after 2 second, where the magnitude of $\vec{r}$ is in meter.
- (10) Two cars moved simultaneously from Benha heading to Cairo at a constant speed for each of them. If the speed of the first car is 70 km/h, and the speed of the second car is 84 km/h, how long will the driver of the second car waits until he catches up with the driver of the first car at the end of the journey which is 49 km long?

2 الأداء الصفّي - الصف الثاني الثانوي - علمي - تطبيقات الرياضيات لغات - الأسبوع الثاني 2

- (1) If: $\vec{V}_A = 30 \hat{C}$, $\vec{V}_B = 10 \hat{C}$, find : $\vec{V}_{AB}$
- (2) If: $\vec{V}_{AB} = 20 \hat{C}$, $\vec{V}_B = 30 \hat{C}$, find : $\vec{V}_A$
- (3) A car is moving on a straight road at a speed of 80 km/h. On the same road, a motorcycle is moving at a speed of 30 km/h. Find the relative speed of the motorcycle relative to the car when the motorcycle is moving in the same direction as the car .
- (4) A car is moving on a straight road at a speed of 60 km/h. On the same road, a motorcycle moves at a speed of 20 km/h. Find the relative speed of the motorcycle relative to the car when the motorcycle moves in the opposite direction of the car's movement .
- (5) A speed radar car moves on a desert road at a speed of 40 km/h. This car monitors the movement of a truck coming in the opposite direction, so it appears to it as if it is moving at a speed of 120 km/h. What is the actual speed of the truck?
- (6) A cyclist A moves on a straight road at a speed of 15 km/h and another Cyclist B moves in the same direction at a speed of 12 km/h. Find the algebraic measurement of the velocity vector of B relative to A.
- (7) A ship moves in a straight path towards a port. When it is 100 km away from it, a patrol plane passes over it in the opposite direction at a speed of 250 km/h. The movement of the ship is monitored, so it appears to it as moving at a speed of 300 km/h. Calculate the time that passes from the moment of monitoring until the ship reaches the port.
- (8) A police car moving at a constant speed on a horizontal road measured the relative speed. A truck was moving in front of it in the same direction and found it to be 60 km/h. When the speed of the police car was doubled and the measurement was repeated, the truck appeared to be stationary. Find the actual speed of the truck



- (9) A train (A) 95 meters long, moving at a constant speed of 126 km/h, passed another train (B) 85 meters long, moving at a constant speed of 90 km/h in the opposite direction of the movement of train (A).
Find the time required for train (A) to completely pass train (B)
- (10) Two cities, A and B, on the coastal road, the distance between them is 120 km. a car moved from city A towards city B at a constant speed of 88 km/h. At the same moment, another car moved from city B towards city A at a constant speed of 72 km/h. Find when and where the two cars meet?





2 الأداء المنزلي - الصف الثاني الثانوي - علمى - تطبيقات الرياضيات لغات - الأسبوع الثاني 2

- (1) If: $\overrightarrow{V_{AB}} = 10 \hat{C}$, $\overrightarrow{V_A} = 30 \hat{C}$, find : $\overrightarrow{V_B}$
- (2) If: $\overrightarrow{V_A} = 50 \hat{C}$, $\overrightarrow{V_B} = 32 \hat{C}$, find : $\overrightarrow{V_{AB}}$
- (3) A car is moving on a straight road at a speed of 70 km/h. On the same road, a motorcycle moves at a speed of 40 km/h. Find the relative speed of the motorcycle with respect to the car when the motorcycle is moving in the same direction as the car
- (4) A car is moving on a straight road at a speed of 75 km/h. On the same road, a motorcycle moves at a speed of 35 km/h. Find the relative speed of the motorcycle relative to the car when the motorcycle moves in the opposite direction of the car.
- (5) A ship moves in a straight path towards a port. When it is 50 km away from it, a surveillance plane passes over it in the opposite direction at a speed of 200 km/h. The movement of the ship is monitored and it appears to be moving at a speed of 250 km/h. Calculate the time that passes from the moment of monitoring until the ship arrives at the port.
- (6) A car (A) moving on a straight road measured the relative speed of a car (B) coming in the opposite direction and found it to be 130 km/h. When car (A) doubled its speed and repeated the measurement, it found that the speed of car (B) became 180 km/h.
Find the actual speed of each of the two cars.
- (7) A train (A) 70 meters long moving at a speed of 108 km/h passed another train (B) 80 meters long moving at a speed of 72 km/h in the opposite direction of the direction of the train's (A),
find the time required for train (A) to completely pass train (B)
- (8) Two cities A, B, the distance between them is 120 km, a car moved from city A towards city B at a constant speed of 90 km/h, and at the same moment another car moved from city B towards city A at a constant speed of 60 km/h, find when and where the two cars meet?



- (9) A speed monitoring radar car is moving on the desert road at a speed of 60 km/h, this car monitors the movement of a truck coming in the opposite direction, so it appears to it as if it is moving at a speed of 100 km/h, so what is the actual speed of the truck
- (10) A cyclist A is moving on a straight road at a speed of 20 km/h and another cyclist B is moving in the same direction at a speed of 11 km/h, so find the algebraic measurement of the velocity vector of B with respect to A.



2 التقييمات الأسبوعية - الصف الثاني الثانوى - علمى - تطبيقات الرياضيات لغات - الأسبوع الثانى 2

First Group :

- (1) If: $\vec{V}_{AB} = 24 \hat{C}$, $\vec{V}_B = 16 \hat{C}$, find : $\vec{V}_A$
- (2) A car is moving on a straight road at a speed of 120 km/h. On the same road, a motorcycle moves at a speed of 35 km/h. Find the relative speed of the motorcycle with respect to the car when the motorcycle moves in the opposite direction of the car's motion.
- (3) Find the distance in kilometers covered by a car moving at a constant speed of 69 km/h for 40 minutes.
- (4) A cyclist traveled a distance of 40 km on a straight road at a speed of 10 km/h and then returned on the same road. He traveled 30 km in the opposite direction at a speed of 15 km/h. Find his average velocity vector during the entire trip.
- (5) A particle moves so that the vector of its position $\vec{r}$ is given as a function of time in terms of the two fundamental unit vectors $\hat{i}, \hat{j}$ by the relation :
 $\vec{r}(t) = (3t + 1) \hat{i} + (4t - 2) \hat{j}$
Find: the norm of the displacement vector up to the moment $t = 5$



Second Group :

(1) If: $\vec{V}_{AB} = 35 \hat{C}$, $\vec{V}_A = 10 \hat{C}$, find : $\vec{V}_B$

- (2) A car is moving on a straight road at a speed of 65 km/h. On the same road, a motorcycle moves at a speed of 25 km/h. Find the relative speed of the motorcycle with respect to the car when the motorcycle moves in the opposite direction to the car.
- (3) Find the distance in kilometers covered by a car moving at a constant speed of 66 km/h for 20 minutes.
- (4) A cyclist traveled a distance of 60 km on a straight road at a speed of 20 km/h and then returned on the same road 10 km in the opposite direction at a speed of 10 km/h. Find his average velocity vector during the entire trip.
- (5) A particle moves so that the vector of its position $\vec{r}$ is given as a function of time in terms of the two fundamental unit vectors $\hat{i}, \hat{j}$ by the relation :
- $$\vec{r}(t) = (12t + 5)\hat{i} + (16t - 3)\hat{j}$$
- Find: the norm of the displacement vector up to the moment $t=2$



The third group :

(1) If: $\vec{V}_A = 45 \hat{C}$, $\vec{V}_B = 37 \hat{C}$, find : $\vec{V}_{AB}$

- (2) A car is moving on a straight road at a speed of 27 km/h. On the same road, a motorcycle moves at a speed of 12 km/h. Find the relative speed of the motorcycle with respect to the car when the motorcycle moves in the opposite direction of the car.
- (3) Find the distance in kilometers covered by a car moving at a constant speed 72 km/h for 25 minutes.
- (4) A cyclist traveled a distance of 76 km on a straight road at a speed of 19 km/h and then returned on the same road 52 km in the opposite direction at a speed of 13 km/h. Find his average velocity vector during the entire trip.
- (5) A particle moves so that the vector of its position $\vec{r}$ is given as a function of time in terms of the two fundamental unit vectors $\hat{i}, \hat{j}$ by the relation :
- $$\vec{r}(t) = (5t + 3) \hat{i} + (12t - 1) \hat{j}$$
- Find: the norm of the displacement vector up to the moment $t = 2$



Classroom Performance Week: (3) Semester (2) Mathematics Applications Grade: Second Secondary (Scientific)

- (1) A particle started moving in a constant direction at a speed of 15 cm/s and with a constant acceleration of 5 cm/s^2 acting in the same direction as the initial velocity. Find: The velocity of the particle at the end of one minute from the start of the movement.
- (2) A particle started moving in a constant direction at a speed of 30 cm/s and with a constant acceleration of 4 cm/s^2 acting in the same direction as the initial velocity. Find: The time that passes from the start of the movement until its speed becomes 0.5 m/s .
- (3) The speed of a car decreased regularly from 54 km/h to 3 m/s in a time of half a minute. Find the magnitude of the acceleration of the movement.
- (4) A car is moving at a speed of 90 km/h, the driver pressed the brake pedal so that the speed decreased at a constant rate until the car stopped after 5 seconds.
Calculate: The deceleration of the car during the decrease in speed.
- (5) A car is moving at a speed of 54 km/h. The driver pressed the brake pedal so that the speed decreased at a constant rate until the car stopped after 4 seconds. Calculate the distance traveled by the car from the moment the brake pedal was pressed until it stopped completely.
- (6) A small ball was thrown horizontally at a speed of 30 m/s, and it moved in a straight line with a deceleration motion with a constant deceleration of 0.5 m/s^2 . Determine the speed of the ball after 18 seconds from the start of the movement.



- (7) A particle began its movement in a constant direction at a speed of 30 cm/s and with a constant acceleration of 6 cm/s^2 in the same direction as the particle's speed. Calculate: The distance traveled after 5 seconds from the start of the movement.
- (8) A body moves in a straight line with a constant acceleration, its speed increased from 15 m/s to 25 m/s After covering a distance of 100 meters, calculate the time required for this.
- (9) A particle started its movement from rest in a straight line with a constant acceleration of 2 cm/s^2 and covered a distance of 25 cm. Find the speed of the particle at the end of that distance.
- (10) A car started from rest with an acceleration of 2 m/s^2 . Find the distance covered by the car when its speed becomes 6 m/s.



Homework Week: (3) Term (2)
Grade: Second Secondary (Scientific)

Mathematics Applications

- (1) A particle started moving in a constant direction at a speed of 20 cm/s and with a constant acceleration of 3 cm/s^2 acting in the same direction as the initial velocity . Find: The velocity of the particle at the end of half a minute from the start of the movement.
- (2) A particle started moving in a constant direction at a speed of 35 cm/s and with a constant acceleration of 2 cm/s^2 acting in the same direction as the initial velocity . Find: The time that passes from the start of the movement until its speed becomes 0.65 m/s .
- (3) The speed of a car decreased regularly from 72 km/h to 5 m/s in a time of a quarter of a minute. Find the magnitude of the deceleration of the movement.
- (4) A car is moving at a speed of 108 km/h, the driver pressed the brake pedal so that the speed decreased at a constant rate until the car stopped after 6 seconds. Calculate: The deceleration of the car during the decrease in speed.
- (5) A car is moving at a speed of 36 km/h. The driver pressed the brake pedal so that the speed decreased at a constant rate until the car stopped after 5 seconds. Calculate: The distance traveled by the car from the moment the brake pedal was pressed until it stopped completely.



- (6) A small ball was thrown horizontally at a speed of 10 m/s, so it moved, in a straight line with a deceleration motion with a constant deceleration of 0.2 m/s^2 . Determine the speed of the ball 5 seconds after the start of the movement.
- (7) A particle began its movement in a constant direction at a speed of 50 cm/s and with a constant acceleration of 4 cm/s^2 in the same direction as the particle's speed. Calculate: The distance traveled after 8 seconds from the start of the movement.
- (8) A body moves in a straight line with a constant acceleration, its speed increased from 30 m/s to 50 m/s After covering a distance of 160 meters, calculate the time required for this.
- (9) A particle started its movement from rest in a straight line with a constant acceleration of 8 cm/s^2 and cover a distance of 49 cm. Find the speed of the particle at the end of that distance.
- (10) A car started from rest with an acceleration of 4 m/s^2 . Find the distance covered by the car when its speed becomes 10 m/s .



Weekly Evaluation Week: (3) Semester (2) Mathematics Applications
Grade: Second Secondary (Scientific)

First Group

- (1) A particle began moving in a constant direction at a speed of 25 cm/s and with a uniform acceleration of 7 cm/s^2 acting in the same direction as the particle's speed. Calculate: the distance traveled after 4 seconds from the start of the movement.
- (2) A car started from rest with an acceleration of 3 m/s^2 , find the distance traveled by the car when its speed becomes 12 m/s .
- (3) A small ball was thrown horizontally at a speed of 16 m/s, it moved in a straight line with a deceleration motion with a constant deceleration of 0.4 m/s^2 , determine the speed of the ball after 5 seconds from the start of the movement .
- (4) A body moves in a straight line with a constant acceleration, its speed increased from 5 m/s to 13 m/s after covering a distance of 24 meters, calculate the time required for this
- (5) The speed of a car decreased regularly from 90 km/h to 10 m/s in a time of half a minute, find the magnitude of the deceleration of the movement.



The second group

- (1) A particle began its movement in a constant direction at a speed of 40 cm/s and with a constant acceleration of 4 cm/s^2 in the same direction as the particle's speed. Calculate: the distance traveled after 6 seconds from the start of the movement.
- (2) A car started from rest with an acceleration of 6 m/s^2 , find the distance traveled by the car when its speed becomes 9 m/s .
- (3) A small ball was thrown horizontally with a speed of 8 m/s, it moved in a straight line with a deceleration motion with a constant deceleration of 0.3 m/s^2 , determine the speed of the ball after 10 seconds from the start of the movement .
- (4) A body moves in a straight line with a constant acceleration, its speed increased from 6 m/s to 10 m/s after covering a distance of 16 meters, calculate the time required for this.
- (5) The speed of a car decreased regularly from 54 km/h to 7 m/s in a time of 0.4 minute, find the magnitude of the acceleration of the movement.



The third group

- (1) A particle began its movement in a constant direction with a speed of 60 cm/s and with a constant acceleration of 8 cm/s^2 in the same direction as the particle's speed. Calculate: the distance traveled after 3 seconds from the start of the movement.
- (2) A car started from rest with an acceleration of 8 m/s^2 . Find the distance traveled by the car when its speed becomes 12 m/s
- (3) A small ball was thrown horizontally with a speed of 10 m/s, and it moved in a straight line with a deceleration motion with a constant deceleration of 0.1 m/s^2 . Determine the speed of the ball 20 seconds after the start of the movement.
- (4) A body moves in a straight line with a constant acceleration, and its speed increased from 8 m/s to 14 m/s after covering a distance of 11 meters. Calculate the time required for this.
- (5) The speed of a car decreased regularly from 36 km/s to 5 m/s in a time of a third of a minute. Find the magnitude of the deceleration of the movement.

(4) الأداء الصفي - الصف الثاني الثانوى - علمى - تطبيقات الرياضيات لغات - الأسبوع الرابع (4)

- (1) A bullet was fired horizontally at a wooden block at a speed of 100 m/s and embedded 50 cm inside it. Find the acceleration at which the bullet moves inside the wooden block if it is known that the acceleration is constant.
If a similar bullet is fired at another wooden block like the first, its thickness is 18 cm. What is the speed at which the bullet exits the wooden block?
- (2) The speed of a car decreased regularly from 54 km/h to 18 km/h after covering a distance of 200 meters. Find the distance the car travels after that until it stops.
- (3) A particle began its movement in a constant direction at a speed of 14 cm/s and a constant acceleration of 6 cm/s^2 in the direction of its speed.
Calculate: the distance the particle covered during the fifth second.
- (4) A particle started its motion in a constant direction with a speed of 10 cm/s and a constant acceleration of 3 cm/s^2 in the direction of its speed.
Calculate: the distance covered by the particle during the seventh and eighth seconds together.
- (5) A body started moving at a speed of 10 m/s with a constant acceleration of 4 m/s^2 and covered a distance 12 meters, then the acceleration is stopped and it moved at the speed it acquired for a distance of 42 meters.
Find the total time of the movement.
- (6) A body started moving from rest in a straight line with a constant acceleration 4 cm/s^2 for 30 seconds, then it moved at the speed that it acquired for another 10 seconds. Find the total distance covered by the body.
- (7) A body started moving from rest with a constant acceleration of 2 m/s^2 and when its speed became 12 m/s it moved with a constant retardation 3 m/s^2 until it came to rest. Find the total distance.

- (8) A body started its motion from rest with a uniform acceleration 3 m/s^2 and when its speed became 15 m/s it moved with a uniform deceleration of 5 m/s^2 until it came to rest. Find the total time.
- (9) A particle moved with an initial velocity in a constant direction and with a uniform acceleration. If it covered a distance of 20 meters in the third second of its motion, then covered a distance of 60 meters in the fifth and sixth seconds together. Calculate the acceleration with which the particle moved and its initial velocity.
- (10) A train moves in a straight line between two stations (A) and (B), the distance between them is 700 meters. It starts from station (A) from rest with a uniform acceleration of 2 m/s^2 for 10 seconds, then moves after that with the speed it acquired for a period of time, then covers the last 60 meters of its motion with a uniform deceleration until it stops at station (B). Find the time it takes the train to cover the distance between the two stations.

(4) الأداء المنزلي - الصف الثاني الثانوي - علمي - تطبيقات الرياضيات لغات - الأسبوع الرابع (4)

- (1) A bullet was fired horizontally at a wooden block at a speed of 40 m/s and embedded 20 cm into it. Find the acceleration at which the bullet moves inside the wooden block if it is known that the acceleration is constant. If a similar bullet is fired at another wooden block like the first, 15 cm thick. What is the speed at which the bullet exits the wooden block?
- (2) The speed of a car decreased regularly from 72 km/h to 36 km/h after covering a distance of 300 meters. Find the distance the car travels after that until it stops.
- (3) A particle began its movement in a constant direction at a speed of 24 cm/s and with a constant acceleration of 8 cm/s^2 in the same direction as its speed. Calculate: the distance traveled in the seventh second.
- (4) A particle started its motion in a constant direction with a speed of 15 cm/s and a constant acceleration of 4 cm/s^2 in the direction of its speed. Calculate: The distance covered by the particle during the fifth and sixth seconds together.
- (5) A body started moving at a speed of 8 m/s with a constant acceleration of 2 m/s^2 and covered a distance of 20 meters, then the acceleration stopped, and it moved at the speed it acquired for a distance of 48 meters. Find the total time of the movement.
- (6) A body started moving from rest in a straight line with a constant acceleration of 5 cm/s^2 for 20 seconds, then moved at the speed it acquired for another 8 seconds. Find the total distance covered by the body.

- (7) A body started moving from rest with a constant acceleration of 3 m/s^2 and when its speed became 18 m/s it moved with a constant retardation of 6 m/s^2 until it came to rest. Find the total distance.
- (8) A body started its motion from rest with a uniform acceleration of 5 m/s^2 and when its speed became 20 m/s it moved with a uniform deceleration of 2 m/s^2 until it came to rest. Find the total time.
- (9) A particle moved with an initial velocity in a constant direction and with a uniform acceleration. If it covered a distance of 10 meters in the third second of its motion, then covered a distance of 50 meters in the fifth and sixth seconds together. Calculate the acceleration with which the particle moved and its initial velocity.
- (10) A train moves in a straight line between two stations (A) and (B), the distance between them is 840 meters. It starts from station (A) from rest with a uniform acceleration of 5 m/s^2 for 8 seconds, then it moves after that with the speed it acquired for a period, then it covers the last distance of 80 meters of its motion with a uniform deceleration until it stops at station (B). Find the time it takes the train to cover the distance between the two stations.

(4) التقييمات الأسبوعية - الصف الثانى الثانوى - علمى - تطبيقات الرياضيات لغات - الأسبوع الرابع. (4)

First Group

- (1) A car's speed decreased regularly from 36 km/h to 18 km/h after covering a distance of 300 meters. Find the distance the car travels after that until it stops.
- (2) A particle started moving in a constant direction with a speed of 14 cm/s and a constant acceleration of 6 cm/s^2 in the direction of its speed. Calculate: The distance the particle traveled during the sixth second only.
- (3) A body started moving from rest with a constant acceleration of 3 m/s^2 and when its speed became 18 m/s it moved with a constant retardation of 6 m/s^2 until it stopped. Find the total distance.
- (4) A particle moved with an initial speed in a constant direction and with constant acceleration. If it covered a distance of 15 meters in the fourth second of its movement, then covered a distance of 100 meters in the sixth and seventh seconds together. Calculate the acceleration with which the particle moved.
- (5) A body started its motion from rest with a uniform acceleration of 4 m/s^2 and when its speed became 20 m/s it moved with a uniform deceleration of 2 m/s^2 until it came to rest. Find the total time.

Second Group

- (1) A car's speed decreased uniformly from 72 km/h to 54 km/h after covering a distance of 350 meters. Find the distance the car travels after that until it comes to rest.
- (2) A particle started its motion in a constant direction with a speed of 14 cm/s and a uniform acceleration of 6 cm/s^2 in the direction of its speed. Calculate: the distance covered by the particle during the fourth second only.
- (3) A body started its motion from rest with a uniform acceleration of 2 m/s^2 and when its speed became 8 m/s it moved with a uniform deceleration of 5 m/s^2 until it came to rest. Find the total distance.
- (4) A particle moved with an initial velocity in a constant direction and with a constant acceleration. If it covered a distance of 20 meters in the third second of its movement, then covered a distance of 70 meters in the fourth and fifth seconds together. Calculate the acceleration with which the particle moved.
- (5) A body started its movement from rest with a constant acceleration of 6 m/s^2 and when its speed became 30 m/s it moved with a constant deceleration of 5 m/s^2 until it came to rest. Find the total time.

The third group

- (1) The speed of a car decreased regularly from 108 km/h to 72 km/h after covering a distance of 500 meters. Find the distance the car travels after that until it comes to rest.
- (2) A particle started its movement in a constant direction with a speed of 14 cm/s and a constant acceleration of 6 cm/s^2 in the direction of its speed. Calculate: the distance covered by the particle during the seventh second only.
- (3) A body started its motion from rest with a uniform acceleration of 3 m/s^2 and when its speed became 12 m/s it moved with a uniform deceleration of 4 m/s^2 until it came to rest. Find the total distance.
- (4) A body moved with an initial velocity in a constant direction and with a uniform acceleration. If it covered a distance of 30 meters in the sixth second of its motion, then covered a distance of 90 meters in the eighth and ninth seconds together. Calculate the acceleration with which the particle moved.
- (5) A body started its motion from rest with a uniform acceleration of 4 m/s^2 and when its speed became 24 m/s it moved with a uniform deceleration of 3 m/s^2 until it came to rest. Find the total time.

(5) الأداء الصفي - الصف الثاني الثانوي - علمي - تطبيقات الرياضيات لغات - الأسبوع الخامس (5)

- (1) A small stone fell from the top of a house and reached the ground after one second. Calculate: The speed of the stone when it reaches the ground.
- (2) A small stone fell from the top of a house and reached the ground after 3 seconds. Calculate the height of the house.
- (3) A small stone was thrown into a well at a speed of 5 m/s vertically downwards and it reached the bottom of the well after 2 seconds. Find: The depth of the well.
- (4) A body was thrown into a well at a speed of 8 m/s and reached the bottom of the well after 3 seconds. Find: The speed of the body when it collided with the bottom of the well.
- (5) A particle was thrown vertically upward at a speed of 19.6 m/s. Find the time it took to reach the maximum height.
- (6) A particle was thrown vertically upward at a speed of 49 m/s. After how many seconds does it return to the point of throwing?
- (7) A particle was thrown vertically upwards from a point on the Earth's surface at a speed of 21 m/s. Find: the maximum height reached by the particle.
- (8) A small ball was thrown vertically upwards and then returned to the point of throwing after covering a distance of 245 cm. Find: the time taken for the object to reach the maximum height.
- (9) A particle was thrown vertically upwards from a point on the Earth's surface. The maximum height reached by the particle was 10 meters. Find: the speed at which the particle was thrown.
- (10) A particle was thrown vertically upwards from a point on the Earth's surface and returned to it after 6 seconds from the moment of throwing. Find: the maximum height reached by the particle.

(5) الأداء المنزلي - الصف الثانى الثانوى - علمى - تطبيقات الرياضيات لغات - الأسبوع الخامس (5)

- (1) A small stone fell from the top of a house and reached the ground after 3 seconds. Calculate: the speed of the stone at the moment it reaches the ground.
- (2) A small stone fell from the top of a house and reached the ground after 2 seconds. Calculate the height of the house.
- (3) A small stone was thrown into a well at a speed of 8 m/s vertically downwards and reached the bottom of the well after one second. Find the depth of the well.
- (4) A body was thrown into a well at a speed of 5 m/s and reached the bottom of the well after 4 seconds. Find the speed of the body when it collided with the bottom of the well.
- (5) A particle was thrown vertically upward at a speed of 39.2 m/s. Find the time it took to reach the maximum height.
- (6) A particle was thrown vertically upward at a speed of 19.6 m/s. After how many seconds does it return to the point of throwing?
- (7) A particle was thrown vertically upward from a point on the ground at a speed of 14 m/s. Find the maximum height the particle reached.
- (8) A small ball was thrown vertically upwards and then returned to the point of throwing after covering a distance of 80 cm. Find the time The body reaches its maximum height.
- (9) A particle was thrown vertically upwards from a point on the Earth's surface. The maximum height the particle reached was 20 meters. Find: the speed at which the particle was thrown.
- (10) A particle was thrown vertically upwards from a point on the Earth's surface. It returned to it after 10 seconds from the moment it was thrown. Find: the maximum height the particle reached.

(5) التقييمات الأسبوعية - الصف الثانى الثانوى - علمى - تطبيقات الرياضيات لغات - الأسبوع الخامس (5)

First Group:

- (1) A small stone fell from the top of a tower and reached the ground after 5 seconds. Calculate: The speed of the stone when it reaches the ground.
- (2) A small stone was thrown into a well at a speed of 6 m/s vertically downwards and reached its bottom after 4 seconds. Find: The depth of the well.
- (3) A particle was thrown vertically upward at a speed of 39.2 m/s. Find the time it took to reach its maximum height.
- (4) A particle was thrown vertically upward from a point on the ground at a speed of 7 m/s. Find: The maximum height the particle reached.
- (5) A particle was thrown vertically upward from a point on the ground. The maximum height the particle reached was 30 meters. Find: The speed at which the particle was thrown.

Second Group:

- (1) A small stone fell from the top of a tower and reached the ground after 4 seconds. Calculate: The speed of the stone when it reaches the surface of the earth .
- (2) A small stone was thrown into a well at a speed of 8 m/s vertically downwards and reached its bottom after 3 seconds. Find: the depth of the well .
- (3) A particle was thrown vertically upwards at a speed of 29.4 m/s. Find the time it took to reach its maximum height .
- (4) A particle was thrown vertically upwards from a point on the surface of the earth at a speed of 28 m/s. Find: the maximum height the particle reached
- (5) A particle was thrown vertically upwards from a point on the surface of the earth. The maximum height the particle reached was 15 meters. Find: the speed at which the particle was thrown.

The third group .

- (1) A small stone fell from the top of a tower and reached the surface of the earth after 2 seconds. Calculate: the speed of the stone when it reached the surface of the earth .
- (2) A small stone was thrown into a well at a speed of 10 m/s vertically downwards and reached its bottom after 2 seconds. Find: the depth of the well .
- (3) A particle was thrown vertically upwards at a speed of 58.8 m/s.
Find the time it took to reach its maximum height
- (4) A particle was thrown vertically upwards from a point on the Earth's surface at a speed of 35 m/s. Find the maximum height the particle reached.
- (5) A particle was thrown vertically upwards from a point on the Earth's surface. The maximum height the particle reached was 25 meters. Find the speed at which the particle was thrown.

(6) الأداء الصفّي - الصف الثاني الثانوي - علمي - تطبيقات الرياضيات لغات - الأسبوع السادس (6)

- (1) A stone was thrown vertically upwards at a speed of 39.2 m/s. Calculate the distance the stone covered in just the third second from the moment of throwing.
- (2) From the top of a hill 19.6 meters high, an object was thrown vertically upwards at a speed of 14.7 m/s. Find: The speed of the object when it reached the surface of the earth.
- (3) From the top of a hill 19.6 meters high, an object was thrown vertically upwards at a speed of 14.7 m/s. Find: The time taken by the object from the moment it was thrown until it reached the surface of the earth.
- (4) A particle was thrown vertically upwards at a speed of 14 m/s from a point 350 meters above the surface of the earth. Calculate the total distance the object traveled from the moment it was thrown until it reached the surface of the earth.
- (5) A small ball was thrown vertically upwards from a house window. The ball was seen descending in front of the window 4 seconds after it was thrown, then it reached the ground 5 seconds after it was thrown. Find the height of the window above the ground in meters.

- (6) A rubber ball fell vertically downwards from a height of 10 meters, hit the ground and rebounded vertically upwards a distance of 2.5 meters. Calculate: the speed of the ball before and immediately after it hit the ground.
- (7) A particle was thrown vertically upwards at a speed of 16 m/sec. Find the time it takes for the particle to reach 330 meters below the point of throwing.
- (8) A particle was thrown vertically upwards from the top of a tower at an initial speed of 14.7 m/second. It reached the ground after 5 seconds. Find: the height of the tower.
- (9) A ball fell vertically downwards from a height of 90 meters above the ground. Upon reaching the ground, it rebounded back upwards at a speed half the speed at which it reached the ground. Find the maximum height the ball reached.
- (10) A body fell from a height of 60 meters above the ground, and at the same moment another body was thrown vertically upwards from the ground at a speed of 20 m/s. The two bodies met after a period of time. Find this time.

(6) الأداء المنزلي - الصف الثانى الثانوى - علمى - تطبيقات الرياضيات لغات - الأسبوع السادس (6)

- (1) A stone was thrown vertically upwards at a speed of 29.4 m/s. Calculate the distance the stone traveled during the first second only from the moment of throwing.
- (2) From the top of a hill 9.8 meters high, an object was thrown vertically upwards at a speed of 4.9 m/s. Find: The speed of the object when it reached the surface of the earth.
- (3) From the top of a hill 9.8 meters high, an object was thrown vertically upwards at a speed of 4.9 m/s. Find: The time taken by the object from the moment it was thrown until it reached the surface of the earth.
- (4) A particle was thrown vertically upwards at a speed of 19.6 m/s from a point 80.4 meters above the surface of the earth. Calculate the total distance the object traveled from the moment it was thrown until it reached the surface of the earth.
- (5) A small ball was thrown vertically upwards from a house window. The ball was seen descending in front of the window 3 seconds after it was thrown, then it reached the ground 4 seconds after it was thrown. Find the height of the window above the ground in meters.

- (6) A rubber ball fell vertically downwards from a height of 40 meters, hit the ground and rebounded vertically upwards a distance of 10 meters. Calculate: the speed of the ball before and immediately after it hit the ground.
- (7) A particle was thrown vertically upwards at a speed of 14.7 m/s. Find the time it takes for the particle to reach 137.2 meters below the point of throwing.
- (8) A particle was thrown vertically upwards from the top of a tower at an initial speed of 19.6 m/second. It reached the ground after 10 seconds. Find: the height of the tower.
- (9) A ball fell vertically downwards from a height of 40 meters above the ground. Upon reaching the ground, it rebounded back upwards at a speed of half the speed at which it reached the ground. Find the maximum height the ball reached.
- (10) A body fell from a height of 50 meters above the ground, and at the same moment another body was thrown vertically upwards from the ground at a speed of 25 m/s. The two bodies met after a period of time. Find this time.

(6) التقييمات الأسبوعية - الصف الثانى الثانوى - علمى - تطبيقات الرياضيات لغات - الأسبوع السادس (6)

First Group

- (1) A small stone fell from the top of a tower and reached the ground after 5 seconds. Calculate: The speed of the stone at the moment it reaches the ground.
- (2) A small stone was thrown into a well at a speed of 6 m/s vertically downwards and reached its bottom after 4 seconds. Find: The depth of the well.
- (3) A stone was thrown vertically upwards at a speed of 58.8 m/s. Calculate the distance the stone traveled during the fourth and fifth seconds only from the moment of throwing.
- (4) A particle was thrown at a speed of 19.6 m/s vertically upwards from a point 200 meters above the ground. Calculate the total distance traveled by the particle from the moment it was thrown until it reached the surface of the earth .
- (5) A particle was thrown vertically upwards from the top of a tower with an initial speed of 9.8 m/s and reached the surface of the earth after 4 seconds. Find: The height of the tower.

Second group

- (1) A small stone fell from the top of a tower and reached the surface of the earth after 2 seconds. Calculate: The speed of the stone at the moment it reached the surface of the earth.
- (2) A small stone was thrown into a well at a speed of 10 m/s vertically downwards and reached its bottom after 2 seconds. Find: The depth of the well .
- (3) A stone was thrown vertically upwards with a speed of 49 m/s. Calculate the distance traveled by the stone during the second and third seconds only from the moment it was thrown .

- (4) A particle was thrown with a speed of 39.2 m/s vertically upwards from a point 150 meters above the surface of the earth. Calculate the total distance traveled by the particle from the moment it was thrown until it reached the surface of the earth.
- (5) A particle was thrown from the top of a tower vertically upwards with an initial speed of 24.5 m/s and reached the surface of the earth after 7 seconds . Find: The height of the tower.

The third group

- (1) A small stone fell from the top of a tower and reached the surface of the earth after 4 seconds . Calculate: The speed of the stone at the moment it reached the surface of the earth.
- (2) A small stone was thrown into a well at a speed of 8 m/s vertically downwards and reached its bottom after 3 seconds . Find: The depth of the well .
- (3) A stone was thrown vertically upwards at a speed of 68.6 m/s . Calculate the distance traveled by the stone during the first and second seconds only from the moment of throwing .
- (4) A particle was thrown at a speed of 29.4 m/s vertically upwards from a point 100 meters above the surface of the earth. Calculate the total distance traveled by the particle from the moment it was thrown until it reached the Earth's surface.
- (5) A particle was thrown vertically upwards from the top of a tower with an initial velocity of 19.6 m/s . It reached the Earth's surface after 6 seconds . Find: the height of the tower.



1 الأداء الصفى - الصف الثانى الثانوى - علمى - تطبيقات الرياضيات لغات - الأسبوع الأول

(1) Convert each of the following units to their corresponding units:

- a) 20 kg.wt to Newton 20×9.8
- b) 54 km/h to m/s $54 \times \frac{5}{18}$
- c) 1960 Newton to kg.wt $1960 \div 9.8$
- d) 0.5 gm.wt to Dyne 0.5×980

(2) A particle moves so that the vector of its position $\vec{r}$ is given as a function of time in terms of the two fundamental unit vectors $\hat{i}$, $\hat{j}$ by the relation :

$$\vec{r}(t) = (6t + 1)\hat{i} + (8t - 2)\hat{j} \text{ find:}$$

the norm of the displacement vector up to the moment $t = 3$

(3) Find the distance in kilometers traveled by a car moving at a uniform speed 81 km/h for 20 minutes.

c) 1960 Newton to kg.wt $1960 \div 9.8$

d) 0.5 gm.wt to Dyne 0.5×980

- (2) A particle moves so that the vector of its position $\vec{r}$ is given as a function of time in terms of the two fundamental unit vectors $\hat{i}, \hat{j}$ by the relation :

$$\vec{r}(t) = (6t + 1)\hat{i} + (8t - 2)\hat{j} \text{ find: } \vec{s} = \vec{r} - \vec{r}_0 = 6t\hat{i} + 8t\hat{j}$$

the norm of the displacement vector up to the moment $t = 3$ $\vec{s} = 18\hat{i} + 24\hat{j}$
 $\|\vec{s}\| = \sqrt{18^2 + 24^2} = 30$

- (3) Find the distance in kilometers traveled by a car moving at a uniform speed 81 km/h for 20 minutes.
- (4) Find the hourly time taken by a car moving at a uniform speed of 20 m/s to cover a distance of 72 km .
- (5) A runner moves 30 meters East, then moves 40 meter North. Calculate the distance and the displacement cut by the runner .

- (3) Find the distance in kilometers traveled by a car moving at a uniform speed 81 km/h for 20 minutes.

$$S = v \times t$$
$$81 \times \frac{1}{3} = 27 \text{ km}$$

- (4) Find the hourly time taken by a car moving at a uniform speed of 20 m/s to cover a distance of 72 km.

$$v = \frac{d}{t} \quad t = \frac{72000}{20} = \frac{3600 \text{ sec}}{60 \times 60}$$

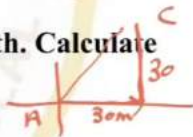
- (5) A runner moves 30 meters East, then moves 40 meter North. Calculate the distance and the displacement cut by the runner .
- (6) A cyclist traveled 50 km on a straight road at a speed of 20 km/h and then returned on the same road. He traveled 18 km in the opposite direction at a speed of 12 km / h . Find its average velocity vector for the whole journey and then find the average speed for the whole journey.
- (7) A cyclist covered 32 km on a straight road at a speed of 16 km/h, then traveled 27 km in the same direction at a speed of 9 km/h.

(4) Find the hourly time taken by a car moving at a uniform speed of 20 m/s to cover a distance of 72 km .

$$v = \frac{s}{t} \quad t = \frac{72000}{20} = \frac{3600 \text{ sec}}{60 \times 60}$$

(5) A runner moves 30 meters East, then moves 40 meter North. Calculate the distance and the displacement cut by the runner .

$$S = \sqrt{30^2 + 40^2} = 50 \text{ m in } \overline{AC}$$



(6) A cyclist traveled 50 km on a straight road at a speed of 20 km/h and then returned on the same road. He traveled 18 km in the opposite direction at a speed of 12 km / h . Find its average velocity vector for the whole journey and then find the average speed for the whole journey.

(7) A cyclist covered 32 km on a straight road at a speed of 16 km/h, then traveled 27 km in the same direction at a speed of 9 km/h. Find the vector of its average velocity during the entire trip, then find the average speed during the entire trip.

$$S = \sqrt{30^2 + 30^2} = 30\sqrt{2} \text{ m AC}$$

$$A \quad 30\text{m}$$

- (6) A cyclist traveled 50 km on a straight road at a speed of 20 km/h and then returned on the same road. He traveled 18 km in the opposite direction at a speed of 12 km/h. Find its average velocity vector for the whole journey and then find the average speed for the whole journey.

$$V_1 = 20 \text{ km/hr}, S_1 = 50$$

$$t_1 = 5/2 \text{ hr}$$

$$S_2 = -18$$

$$t_2 = \frac{18}{12} = 3/2$$

$$V_2 = -12 \text{ km/hr}$$

$$V_A = \frac{50 - 18}{3/2 + 5/2} = \dots$$

- (7) A cyclist covered 32 km on a straight road at a speed of 16 km/h, then traveled 27 km in the same direction at a speed of 9 km/h. Find the vector of its average velocity during the entire trip, then find the average speed during the entire trip.

$$S_1 = 32 \text{ km}$$

$$V_1 = 16 \text{ km/hr}$$

$$S_2 = 27 \text{ km}$$

$$V_2 = 9 \text{ km/hr}$$

$$\vec{V}_A = \frac{32 + 27}{9 + 16} \rightarrow$$

$$(1) \quad V_A = \frac{32 + 27}{9 + 16} =$$

and direction of this velocity. $\vec{v}_A = \frac{(7, 9) - (3, 6)}{8 - 3} = \frac{(4, 3)}{5} = (\frac{4}{5}, \frac{3}{5})$
 $\tan^{-1} \frac{3}{4}$ $\|\vec{v}_A\| = \sqrt{(\frac{4}{5})^2 + (\frac{3}{5})^2} = 1$

- (9) If the position vector of a particle moving in a straight line from point O is given as a function of time t (second) by the relation: $\vec{r} = (t^2 + 1) \hat{c}$, find the magnitude of the displacement vector $\vec{s}$ after 3 seconds, where the magnitude of $\vec{r}$ is in meter.
- (10) Two cars moved simultaneously from Benha heading to Cairo at a constant speed for each of them. If the speed of the first car is 98 km/h, and the speed of the second car is 42 km/h, how long will the driver of the first car wait until he catches up with the driver of the second car at the end of the journey which is 49 km long?

Find the magnitude of the displacement vector $\vec{s}$ after 3 seconds, where the magnitude of $\vec{r}$ is in meter.

$$\vec{s} = \vec{r} - \vec{r}_0 = t^2 \vec{c}$$

$$\vec{s} = 9\vec{c} \quad \|\vec{s}\| = 9$$

- (10) Two cars moved simultaneously from Benha heading to Cairo at a constant speed for each of them. If the speed of the first car is 98 km/h, and the speed of the second car is 42 km/h, how long will the driver of the first car wait until he catches up with the driver of the second car at the end of the journey which is 49 km long?

$$v_1 = 98 \text{ km/hr}$$

$$v_2 = 42 \text{ km/hr}$$

$$t_1 = \frac{49}{98} = \frac{1}{2} \text{ hr}$$

$$t_2 = \frac{49}{42} = \frac{7}{6} \text{ hr}$$

$$\frac{1}{2} - \frac{7}{6} = \dots \text{ hr}$$



1 الأداء المنزلي - الصف الثاني الثانوي - علمي - تطبيقات الرياضيات لغات - الأسبوع الأول 1

(1) Convert each of the following units to their corresponding units:

- a) 10 kg.wt to Newton 10×9.8
- b) 72 km/h to m/s $72 \times \frac{5}{18}$
- c) 65000 Dyne to Newton 65000×10^{-5}
- d) 4900 Dyne to gm wt $4900 \div 980$

(2) A particle moves so that the vector of its position $\vec{r}$ is given as a function of time in terms of the two fundamental unit vectors $\hat{i}, \hat{j}$ by the relation :

$$\vec{r}(t) = (4t + 2)\hat{i} + (3t - 1)\hat{j} \text{ find:}$$

Norm of the Displacement vector up to the moment $t = 4$

$\vec{r}(t) = (4t + 2)\hat{i} + (3t - 1)\hat{j}$ find:

Norm of the Displacement vector up to the moment $t = 4$

$$\vec{s} = \vec{r} - \vec{r}_0$$

$$= 4t\hat{i} + 3t\hat{j}$$

$$\vec{s} = 16\hat{i} + 12\hat{j}$$

$$\|\vec{s}\| = \sqrt{16^2 + 12^2} = 20$$

- (3) Find the distance in kilometers traveled by a car moving at a uniform speed 56 km/h for 15 minutes.

$$\frac{1}{4} \text{ hr}$$

$$S = v \times t$$

$$= 56 \times \frac{1}{4} = 14 \text{ km}$$

- (4) Find the hourly time taken by a car moving at a uniform speed of 40 m/s in a distance of 36 km.

$$t = \frac{36 \times 10^3}{40 \times \frac{18}{5}} = \frac{1}{4} \text{ hr}$$

$$40 \times \frac{18}{5} = 8 \times 18$$

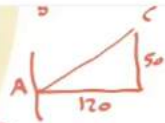
- (5) A runner moves 120 meters East, then moves 50 meters North. Calculate the distance and the displacement cut by the runner.

- (6) A cyclist traveled 30 km on a straight road at a speed of 15 km/h and then returned on the same road He traveled 20 km in the opposite direction at a speed of 20 km / h . Find its velocity vector for the whole journey and then find the average velocity magnitude for the whole

- (5) A runner moves 120 meters East, then moves 50 meters North. Calculate the distance and the displacement cut by the runner.

$$120 + 50 = 170$$

$$\sqrt{120^2 + 50^2} = 130 \text{ in } AC$$



- (6) A cyclist traveled 30 km on a straight road at a speed of 15 km/h and then returned on the same road. He traveled 20 km in the opposite direction at a speed of 20 km/h. Find its velocity vector for the whole journey and then find the average velocity magnitude for the whole journey.

$$S_1 = 30 \text{ km}, \quad t_1 = 2 \text{ hr}$$

$$v_1 = 15 \text{ km/hr}$$

$$S_2 = -20 \text{ km}, \quad t_2 = 1 \text{ hr}$$

$$v_2 = -20 \text{ km/hr}$$

$$\bar{v}_A = \frac{30 - 20}{2 + 1} = \frac{10}{3}$$

- (7) A cyclist covered 42 km on a straight road at a speed of 14 km/h, then traveled 6 km in the same direction at a speed of 6 km/h. Find the vector of its average velocity during the entire trip, then find the average speed during the entire trip.

Calculate the distance and the displacement cut by the runner.

$$\frac{170+50}{170}$$

$$\sqrt{170^2 + 50^2} = 180 \text{ in } \Delta$$

- (6) A cyclist traveled 30 km on a straight road at a speed of 15 km/h and then returned on the same road He traveled 20 km in the opposite direction at a speed of 20 km / h . Find its velocity vector for the whole journey and then find the average velocity magnitude for the whole journey.

$$S_1 = 30 \text{ km} \quad v_1 = 15 \text{ km/hr} \\ t_1 = 2 \text{ hr}$$

$$S_2 = -20 \text{ km} \\ v_2 = -20 \text{ km/hr} \\ t_2 = 1$$

$$\vec{v}_A = \frac{30-20}{2+1} = \frac{10}{3}$$

- (7) A cyclist covered 42 km on a straight road at a speed of 14 km/h, then traveled 6 km in the same direction at a speed of 6 km/h. Find the vector of its average velocity during the entire trip, then find the average speed. during the entire trip.

$$S_1 = 42 \text{ km} \\ v_1 = 14 \text{ km/hr} \\ t_1 = \frac{42}{14} = 3 \text{ hr}$$

$$S_2 = 6 \text{ km} \\ v_2 = 6 \text{ km/hr} \\ t_2 = 1$$

$$\vec{v}_A = \frac{42+6}{1+3}$$

$$v_A = \|\vec{v}_A\|$$

(3)

A(5, 2) and B(9, 10) respectively. Find: the average velocity vector of the particle during this time period, then find the magnitude and direction of this velocity.

$$\vec{v}_A = \frac{(4, 8)}{7-3} = \frac{(4, 8)}{4} = (1, 2)$$

$$\|\vec{v}\| = \sqrt{1^2 + 2^2} = \sqrt{5}$$

$$\tan^{-1} 2 = \tan^{-1} 2$$

(9) If the position vector of a particle moving in a straight line from the origin point (O) is given as a function of time t (seconds) by the relation:

$\vec{r} = (2t^2 + 3)\hat{c}$, find the magnitude of the displacement vector $\vec{s}$ after

2 second, where the magnitude of $\vec{r}$ is in meter.

$$\vec{s} = \vec{r} - \vec{r}_0 = 2t^2\hat{c} \quad t=2$$

$$\vec{s} = 8\hat{c} \quad \|\vec{s}\| = 8$$

(10) Two cars moved simultaneously from Benha heading to Cairo at a constant speed for each of them. If the speed of the first car is 70 km/h, and the speed of the second car is 84 km/h, how long will the driver of the second car waits until he catches up with the driver of the first car at the end of the journey which is 49 km long?

of this velocity.

$$v_A = 7 - 3u$$

$$\tan^{-1} 3 = \tan^{-1} 2$$
$$\|v\| = 1^2 + 2^2 = \sqrt{5}$$

- (9) If the position vector of a particle moving in a straight line from the origin point (O) is given as a function of time t (seconds) by the relation:

$\vec{r} = (2t^2 + 3)\hat{c}$, find the magnitude of the displacement vector $\vec{s}$ after

2 second, where the magnitude of $\vec{r}$ is in meter.

$$\vec{s} = \vec{r} - \vec{r}_0 = 2t^2\hat{c} \quad t=2$$
$$\vec{s} = 8\hat{c} \quad \|\vec{s}\| = 8$$

- (10) Two cars moved simultaneously from Benha heading to Cairo at a constant speed for each of them. If the speed of the first car is 70 km/h, and the speed of the second car is 84 km/h, how long will the driver of the second car waits until he catches up with the driver of the first car at the end of the journey which is 49 km long?

$$v_1 = 70 \text{ km/h}$$

$$v_2 = 84 \text{ km/h}$$

$$t_1 = \frac{49}{70}$$

$$t_2 = \frac{49}{84}$$

$$\frac{49}{84} - \frac{49}{70}$$



Weekly Evaluation Week: (2) Semester (2)
Mathematics Applications Grade: Second Secondary (Scientific)

First Group :

(1) If: $\vec{V}_{AB} = 24 \hat{C}$, $\vec{V}_B = 16 \hat{C}$, find : $\vec{V}_A$

$$\vec{V}_{AB} = \vec{V}_A - \vec{V}_B$$

$$\vec{V}_A = \vec{V}_{AB} + \vec{V}_B = 24 + 16 = 40 \hat{C}$$

(2) A car is moving on a straight road at a speed of 120 km/h. On the same road, a motorcycle moves at a speed of 35 km/h. Find the relative speed of the motorcycle with respect to the car when the motorcycle moves in the opposite direction of the car's motion.

$$V_{AB} = V_A + V_B = 120 + 35 = 155 \text{ km/h}$$

(3) Find the distance in kilometers covered by a car moving at a constant speed of 69 km/h for 40 minutes.

$$d = t \cdot v = 69 \times \frac{40}{60} = 46 \text{ km}$$

(4) A cyclist traveled a distance of 40 km on a straight road at a speed of 10 km/h and then returned on the same road. He traveled 30 km in the opposite direction at a speed of 15 km/h. Find his average velocity vector during the entire trip.

$$t_1 = \frac{40}{10} = 4 \text{ h} \quad t_2 = \frac{30}{15} = 2 \text{ h}$$

$$A.V = \frac{40 - 30}{4 + 2} = \frac{10}{6} \text{ km/h}$$

(5) A particle moves so that the vector of its position $\vec{r}$ is given as a function of time in terms of the two fundamental unit vectors $\hat{i}, \hat{j}$ by the relation :
 $\vec{r}(t) = (3t + 1)\hat{i} + (4t - 2)\hat{j}$ find:
the norm of the displacement vector up to the moment $t = 5$

$$r_o = i + (-2)j \rightarrow \vec{S} = \vec{r} - \vec{r}_o$$

$$\vec{S} = (3t)i + (4t)j$$

$$S(t=0) = 15i + 20j \rightarrow \|\vec{S}\| = \sqrt{15^2 + 20^2} = 25$$

Second Group :

(1) If: $\vec{V}_{AB} = 35 \hat{C}$, $\vec{V}_A = 10 \hat{C}$, find : $\vec{V}_B$

$$\vec{V}_{AB} = \vec{V}_A - \vec{V}_B$$

$$\vec{V}_B = \vec{V}_A - \vec{V}_{AB} = 10 + 35 = -25 \hat{C}$$

(2) A car is moving on a straight road at a speed of 65 km/h. On the same road, a motorcycle moves at a speed of 25 km/h. Find the relative speed of the motorcycle with respect to the car when the motorcycle moves in the opposite direction to the car.

$$V_{AB} = V_A + V_B = 65 + 25 = 90 \text{ km/h}$$

(3) Find the distance in kilometers covered by a car moving at a constant speed of 66 km/h for 20 minutes.

$$d = 66 \times \frac{20}{60} = 22 \text{ km}$$

(4) A cyclist traveled a distance of 60 km on a straight road at a speed of 20 km/h and then returned on the same road 10 km in the opposite direction at a speed of 10 km/h. Find his average velocity vector during the entire trip.

$$t_1 = \frac{60}{20} = 3 \quad t_2 = \frac{10}{10} = 1$$

$$A.V = \frac{10}{4} = 2.5 \text{ km/h}$$

(5) A particle moves so that the vector of its position $\vec{r}$ is given as a function of time in terms of the two fundamental unit vectors $\hat{i}, \hat{j}$ by the relation : $\vec{r}(t) = (12t+5)\hat{i} + (16t-3)\hat{j}$ find: the norm of the displacement vector up to the moment $t=2$

$$r_o = (5) \hat{i} + (-3) \hat{j}$$

$$\vec{S} = \vec{r} - \vec{r}_o \rightarrow \vec{S} = (12t) \hat{i} + (16t) \hat{j}$$

$$S(t=2) = 24 \hat{i} + 32 \hat{j} \rightarrow \|\vec{S}\| = \sqrt{24^2 + 32^2} = 40$$

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The third group :

(1) If: $\vec{V}_A = 45 \hat{C}$, $\vec{V}_B = 37 \hat{C}$, find : $\vec{V}_{AB}$

$$\vec{V}_{AB} = \vec{V}_A - \vec{V}_B = 45 - 37 = 8 \hat{C}$$

(2) A car is moving on a straight road at a speed of 27 km/h. On the same road, a motorcycle moves at a speed of 12 km/h. Find the relative speed of the motorcycle with respect to the car when the motorcycle moves in the opposite direction of the car.

$$\vec{V}_{AB} = \vec{V}_A + \vec{V}_B = 27 + 12 = 39 \text{ km/h}$$

(3) Find the distance in kilometers covered by a car moving at a constant speed 72 km/h for 25 minutes.

$$d = t \times v = \frac{25}{60} \times 72 = 30$$

(4) A cyclist traveled a distance of 76 km on a straight road at a speed of 19 km/h and then returned on the same road 52 km in the opposite direction at a speed of 13 km/h. Find his average velocity vector during the entire trip.

$$t_1 = \frac{76}{19} = 4 \text{ h} \quad t_2 = \frac{52}{13} = 4 \text{ h}$$
$$A.V = \frac{76 - 52}{8} = 3 \text{ km/h}$$

(5) A particle moves so that the vector of its position $\vec{r}$ is given as a function of time in terms of the two fundamental unit vectors $\hat{i}$, $\hat{j}$ by the relation : $\vec{r}(t) = (5t + 3)\hat{i} + (12t - 1)\hat{j}$ find: the norm of the displacement vector up to the moment $t = 2$

$$r_o = (3)\hat{i} + (-1)\hat{j}$$
$$\vec{S} = \vec{r} - \vec{r}_o \rightarrow \vec{S} = (5t)\hat{i} + (12t)\hat{j}$$
$$S(t=2) = (10)\hat{i} + (24)\hat{j} \rightarrow \|\vec{S}\| = \sqrt{10^2 + 24^2} = 26$$

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كيفية طباعة صفحات معينة من ملف معين

مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9

